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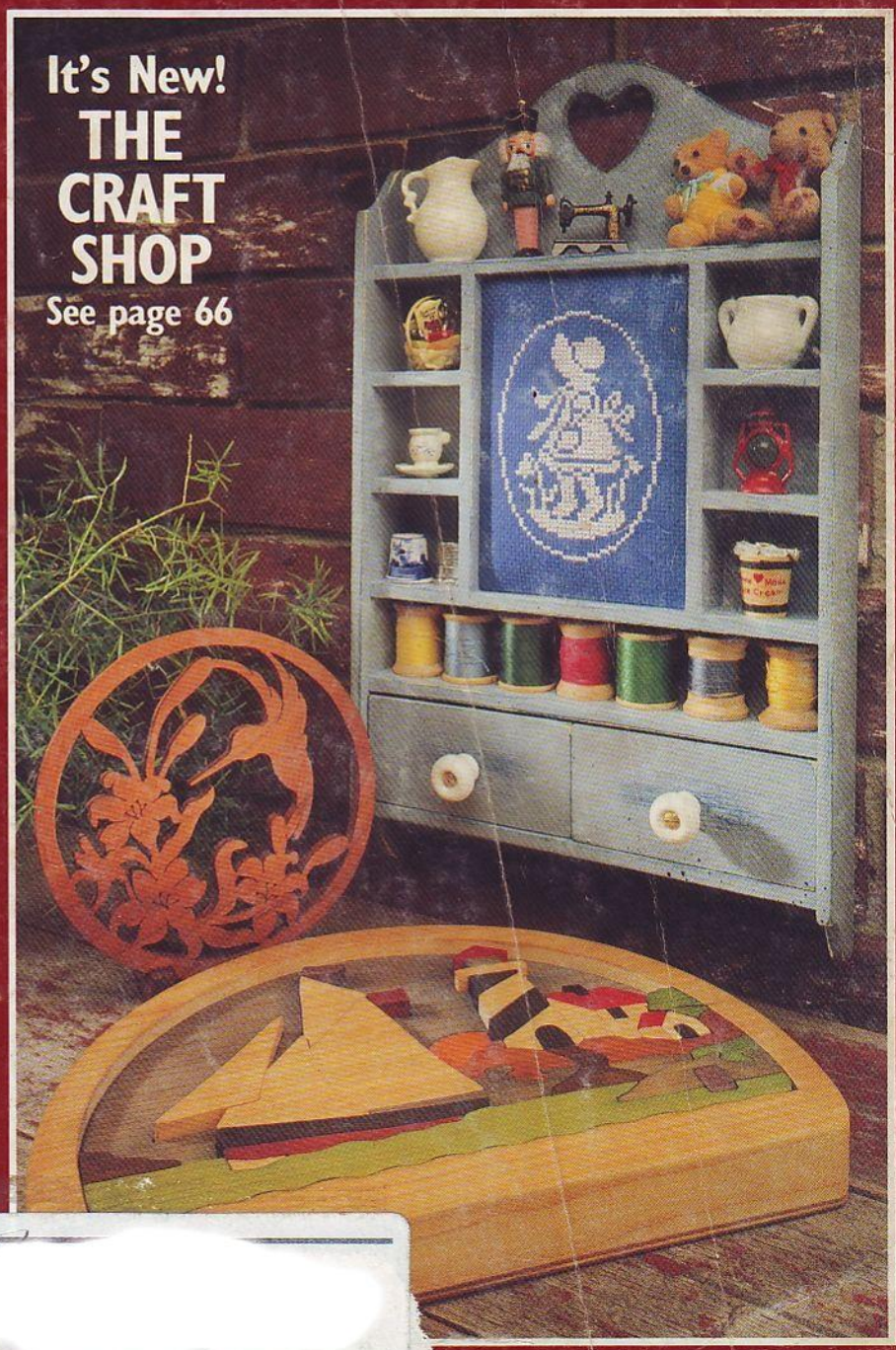

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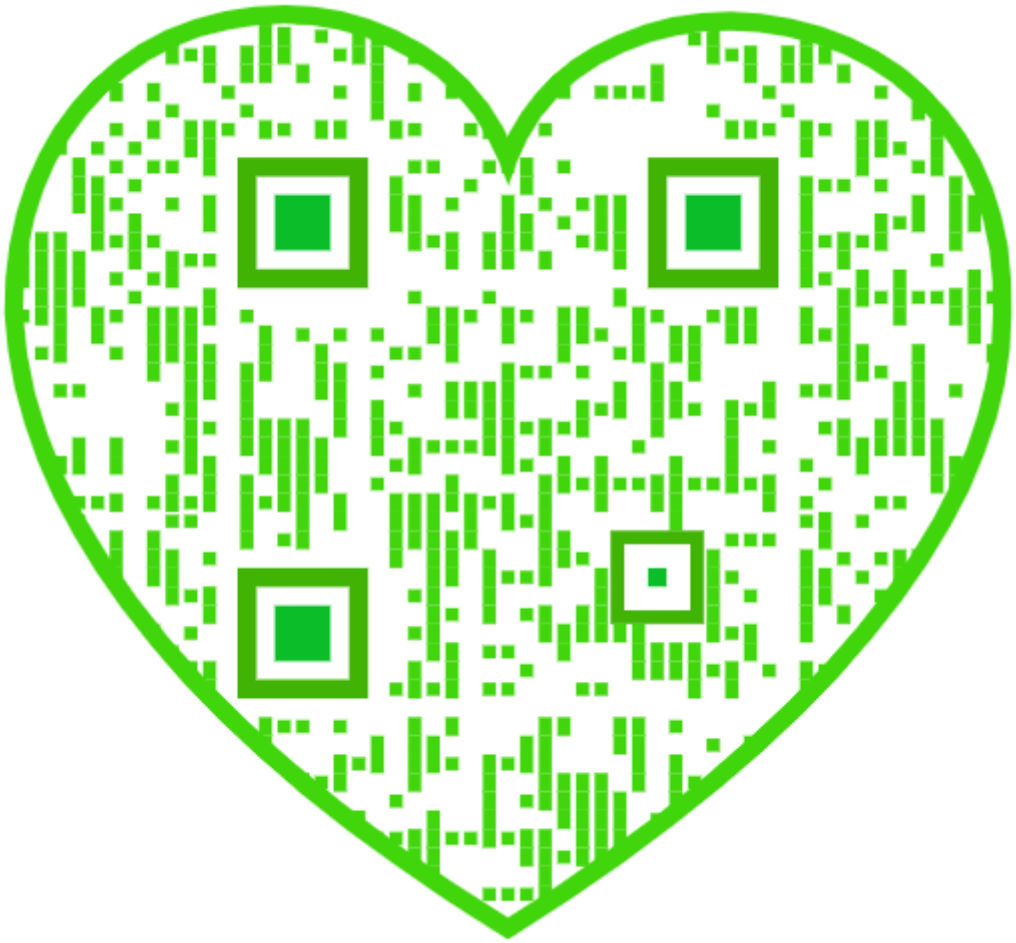

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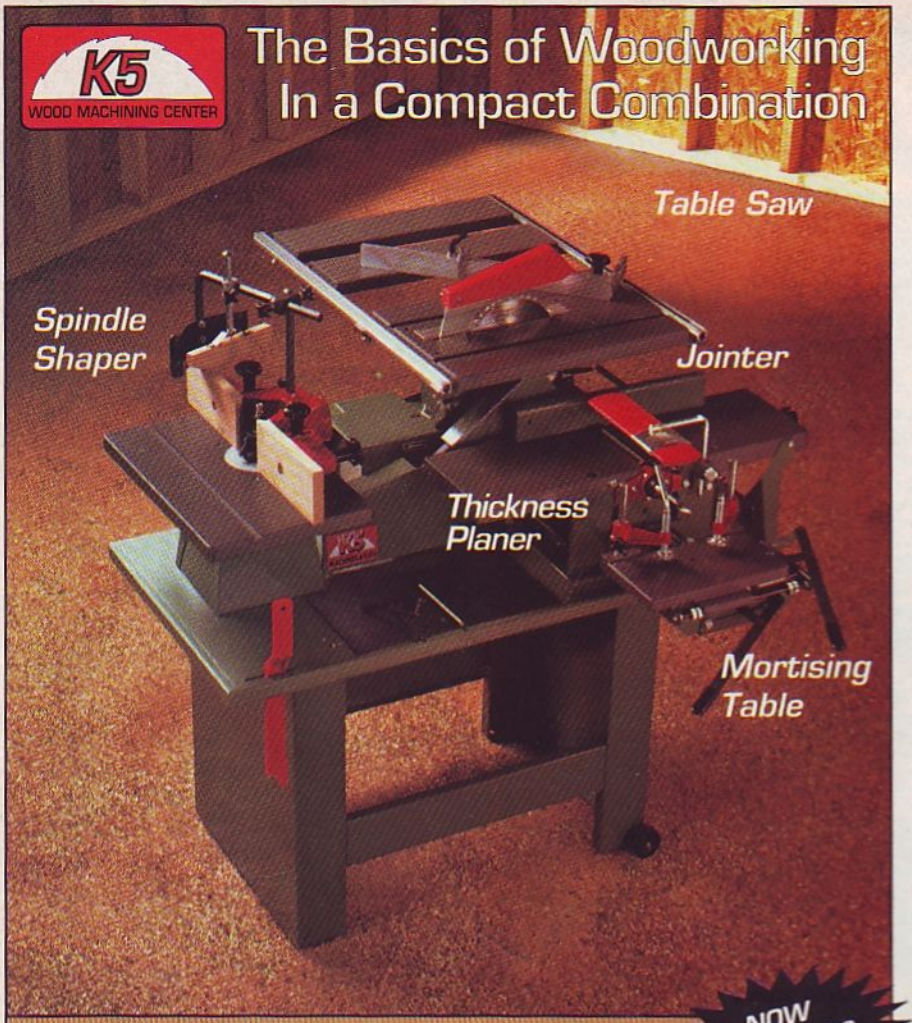

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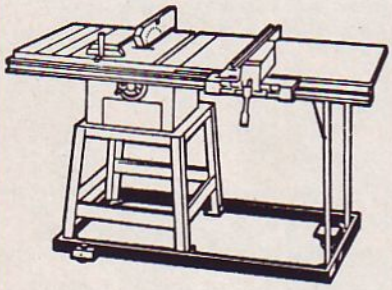

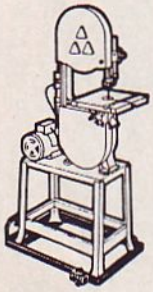

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This issue's cover wood grain: Satinwood *Cover photo: Hopkins Associates*

JANUARY 1991 ISSUE NO. 40

WOOD PROFILE
Black cherry: The poor man's mahogany 25
Today, cherry reigns as a princely hardwood. But years ago, furnituremakers regarded it as merely a substitute for Honduras mahogany.

CRAFTSMAN CLOSE-UP 27
Boomer's people
Californian Bob Boomer carves a national reputation of excellence from gnarled manzanita limbs he scouts in the Sierra National Forest.

SURVIVAL GUIDE 32
Respirators
Though shaping, sanding, and finishing add foreign particles to your workshop's air, you can breathe easier with the good news found here.

Carve a canvasback 34
Our new carving department takes to the air with a sensational waterfowl relief.

SHOP-TESTED TECHNIQUES 38
Large-scale moldings
Building large moldings doesn't require a lot of fancy jigs and tools. In fact, you can cut most profiles with a tablesaw.

NOW YOU CAN BUILD IT
Sharpshooter's showcase 44
Outdoor enthusiasts, here's a project you'll definitely want in your sights—our multi-featured oak gun cabinet.

Waiting for the woodworking bus 52
In San Diego, young kids wait eagerly for a one-of-a-kind bus that brings Sheila Dawson's woodshop-on-wheels to their school.

The Shaker oval carrier 54
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Enamel spray paint 58
For those projects better suited for paint, you'll want to pore over this article to find out more about aerosol products.

HOMEMADE TOOL
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Welcome another member to our Collector's Edition of fine brass-and-walnut tools. This one will earn a place in your apron.

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Beginning this month, you'll find a turning article in every *WOOD* magazine. Here, try your gouge on a reader's novel design.

CRAFT SHOP
Nature in the round 66
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Country shadowbox 68
Here's the perfect eye-catcher for a display of thimbles and other small items.

Relief puzzle 70
Set sail for a good time by scrollsawing a relief puzzle with the lure of the sea.

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Booby-trapping trees, a spiteful sabotage practiced by so-called radical environmentalists in the Northwest, headlines our timber update.

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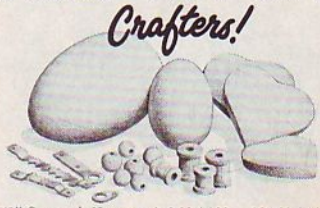

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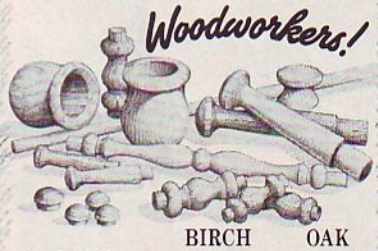

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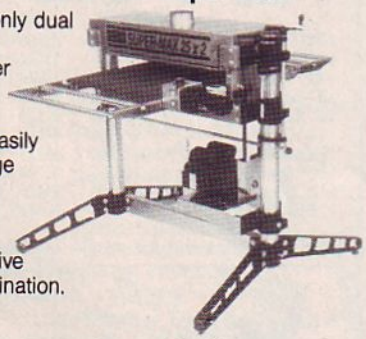

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THE EDITOR'S ANGLE

WELCOME TO THE NEW IMPROVED WOOD MAGAZINE

For the past several months, the staff and I have been working feverishly on our plan to increase the frequency of *WOOD* magazine to eight issues a year. It's been an exhilarating experience for all of us. After all, it's not often that a staff has the opportunity to increase a magazine's editorial coverage by a whopping 120 pages a year. Fortunately, your unyielding support of the product we produce has made this growth possible.

Here's what we've done. For all of you who have been asking us to publish more easy-to-build projects, we're unveiling a new six-page section called The Craft Shop. It's full of delightful items that you'll have fun making and then using yourself or giving as gifts. Over a year's time, that'll be about two dozen more projects for you to choose from. Take a look on pages 66-71 and see what you think of our premier effort.

But there's more! Our readers who love carving or woodturning will be pleased to learn that we're increasing our coverage in both of these areas, too. We'll have at least four pages devoted to carving and two pages of turning material in each issue. To make certain that we bring you the best possible information, we will be tapping into our network of carving and turning experts for help.

Well, there you have it—the "New, Improved" *WOOD* magazine. It's everything you have come to expect from us over the past six years plus some exciting innovations. Here's hoping you like the changes. If you have time, I'd like to hear what you think of them. Just drop me a note here at *WOOD* Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

Larry Clayton

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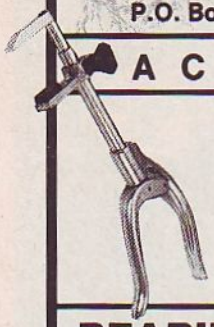

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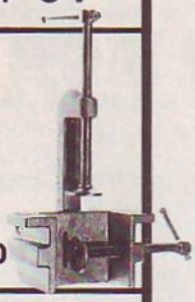

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TALKING BACK

We welcome comments, criticisms, suggestions, and even compliments. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD*® Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.

Mystery lines revealed

While reading pages 22 and 23 in your October issue [issue 38], I came across a line that left me in the dark. At the bottom of the Tips column, you say, "Now, cover the replacement parts with dirty...," and then continue to the next page. Something's missing. I enjoy the magazine and find the tips very helpful.

—John Cooper, Owosso, Mich.

Well, John, the truth is we have mischievous gremlins lurking around in the wee hours eating bits and pieces of our copy. Just kidding, of course, but to help you and other readers fill in the missing copy, insert the following sentences into your issue 38. "...stripping agent and that will speed the aging process of your new parts. About the third time you do this, you won't be able to distinguish the new part from the old ones."

Sorry for the inconvenience. We'll work to do better the next time around.

Second take on Penn State tools

In your October issue on power tools, you failed to identify some significant additions and improvements to our product line. Our Super-15" scrollsaw is now offered in a variable speed version (model Super-V15") where speeds from 400-1800 cuts per minute may be dialed from the motor. This model is priced at $189.95 and offers a dust blower as a standard feature. Significant additions to our single speed Super-15" model (also found with the Super-V15 model) include improved cutting action (with less vibration), a permanent top arm blade holder system to simplify making internal cuts, a new jig to assist mounting blades in standard blade holders, plus free lettering guides and blades. The Super-15 model sells for $119.95 without the dust blower. Our Super 125 planer was reviewed in your April 1990 issue but was omitted from your summary of thickness planers. It has two 12½" knives, makes 1600 cuts per minute, and features an auto-feed of 26 feet per minute. The unit sells for $359.95. Also excluded from the power tool issue was our XL-40 wood lathe. It has 40" centers and a 16" swing. The motor is ½ horsepower with three speeds, and the tailstock includes a live center. A free 6" faceplate and an 8-piece wood chisel set is included with the purchase. The price is $249.95, plus $44.00 for the optional stand.

—Ed Levy, Penn State Industries, Phila., Pa.

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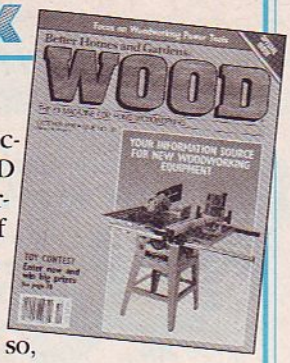
TALKING BACK

Continued from page 8

Enough tools already



I was disappointed in your October issue [issue 38] of WOOD magazine. I subscribed for the purpose of receiving issues full of regular and interesting woodworking articles, not power tool evaluations. Is this going to be the format for the future? If so, then let me off the wagon.

—Dan Rutledge, Converse, TX

Dan, we've had a few other responses like yours, which means that an explanation is in order. The special tool issue of WOOD was a free bonus issue as described in The Editor's Angle on page 7. We are not planning to do a tool guide of this sort in WOOD's new eight-issues-per-year format. We did think, however, that while we were making the switch readers might enjoy a change of pace, especially if they were in the process of making a major tool purchase.

The answer is not blowing in the wind

On page 24 of your issue 38, reader Mike Atkins of Shell Beach, California suggested turning your compressor outlet pressure down to 20 psi to "dust yourself off." He also stated that the "air can get into cuts and lift up the skin. Ouch!"

At the paper mill where I'm employed, safety is a "big" item. Safety meetings, safety contests, safety bulletins, safety training, and a safety supervisor are all part of my environment. And again and again, it's been stressed to us to never use compressed air to dust yourself off. An air bubble may enter the bloodstream at a cut, and "ouch" in this case could mean death, or at the least a company penalty of time off without pay.

Instead, when at home I use a soft bristled brush to dust myself off, and then head to my basement to wash. Thanks for listening.

—Don L. Rathke, Friendship, Wis.

Don, on behalf of all of our readers, thanks for the strong warning and advice. About a day or two after you wrote, we received a second letter on this subject from Joe Snyder of Safford, Arizona He also claims that a company he worked for docked employees for dusting off with an air hose. Instead, he recommends cleaning up with a shop vacuum. Dusting off is a dangerous practice well worth avoiding.

Continued on page 13

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TALKING BACK

Continued from page 11

The silicone solution

My wife was delighted with the "Autumn Delight Necklace" featured in the September issue [issue 37], and asked that I make several. I made a couple necklaces using different types of woods (walnut, purple heart, and mahogany), and Watco natural oil before spraying with Deft gloss clear wood finish. She thought using the different woods made the necklaces unique. But there was a problem.

It seems that the wooden beads shifted around causing the clasp to move from the back of the neck when worn. I solved this by putting a small amount of silicone in each of the end beads. The result: no more shifting beads.

—Larry L. Maly, Tempe Ariz.

Reduced speed = greater torque

I am sure that by now you have received many letters about the lathe article in your October issue of WOOD [issue 38, pages 70-73]. This was a fine article and I enjoyed reading it, but you must know that horsepower is never increased by any mechanical speed change. When you mechanically reduce speed, torque at the spindle increases. This must be what you meant to say.

I read and enjoy every issue of your fine magazine. Thanks for the good work.

—Thomas St. John, Orlando Fla.

Tom, we appreciate the clarification.

Fast fixes for your tablesaw chart

After reviewing our October tool guide, issue 38, we ran across a few errors on the tablesaw chart on page 40 that you'll need to correct. First, switch the labels "AMPS" and "HORSEPOWER" along the top of the chart. Next, change the Bridgewood data under "CUTTING DEPTH" from 4¼" to 3¼". Now, follow the Inca line across to "COUNTRY OF ORIGIN" and change the "S" to "F". Finally, please note that the Powermatic Artisan's Saw model 63 shown on the cover is not included in the chart.

MANUFACTURER/ IMPORTER	MODEL NUMBER	BLADE SIZE¹	NO-LOAD BLADE SPEED (RPM)	(B)ENCH TOP OR (S)TATIONARY	TABLE TYPE²	TABLE SIZE (WxD)	WEIGHT	RIP CAPACITY	ACCEPTS DADO BLADES	CUTTING DEPTH	FENCE RAIL³	DRIVE MECHANISM (D)IRECT/(B)ELT	STYLE⁴	MOTOR			COUNTRY OF ORIGIN⁵	SUGGESTED PRICE
														TYPE⁶	AMPS	HORSEPOWER	VOLTS	
AMT	4571	10	3450	S	O	40h x 27h	251	25	Y	3⅛	T	B	H	O	11h	16/8	110/220	T	445
Black & Decker	9419	8, ½" arbor	3600	B	FS	26½ x 15⅝	35	8½R, 12¼L	Y	1⅝	F	D	B	I	I	7.5	120	U	257
Bridgewood	TSC-108	10	4000	S	O	27 x 40	286	40	Y	4¼	A	B	H	O	N/A	N/A	110/220	T,U	639
	BW-10TABV	10	4200	S	O	36 x 27	485	50	Y	3	T	B	N/A	O	N/A	N/A	220	T,U	1595
Delta	34-444	10	4300	S	O	40 x 27h	220 w/mobile base	25	Y	3⅛	T	B	H	I	1½	U	115/230	U	896
	34-740	10	3450	S	O	30½ x 22¼h	152	25	Y	2¼	T	D	B	I	I	U	110	T	577
	34-670	10	5500	S	O	22¾ x 30¾h	130	24	Y	2⅜	FI	B	B	U	N/A	15	115	T	561
	34-764 Unisaw²	10	4300	S	O	27 x 36h	464	25	Y	3⅛	T	B	B	I	5	17	220	U	3545
	34-330	8¼	4500	B	P	26 x 20	40	12	Y	2⅛	B	D	B	S	N/A	10	115	U	343
Foley-Belsaw	6900909	10	3450	S	O	40 x 27h	255	25	Y	3⅛	FI	B	H	O	1¾	16/15.5	220/110	U	1099
General	350-1	10	4000	S	O	36 x 26	415	25	Y	3⅛	B	B	B	O	3	14	110/220	C	1330
Grizzly	G1022	10	4200	S	O	41 x 27h	255	25	Y	3⅛	T	B	B	O	1½	14.7	110/220	T	345
	G1023 3HP	10	4140	S	O	36 x 27h	500	25R 12L	Y	3⅛	A	BP	B	O	3	18	220	T	895
Inca	250	10, 20mm arbor	3450	B	CAA	20 x 33¼	66	23¼	Y	3½	AI	B	H	O	1½	16/8	115/230	S	995*

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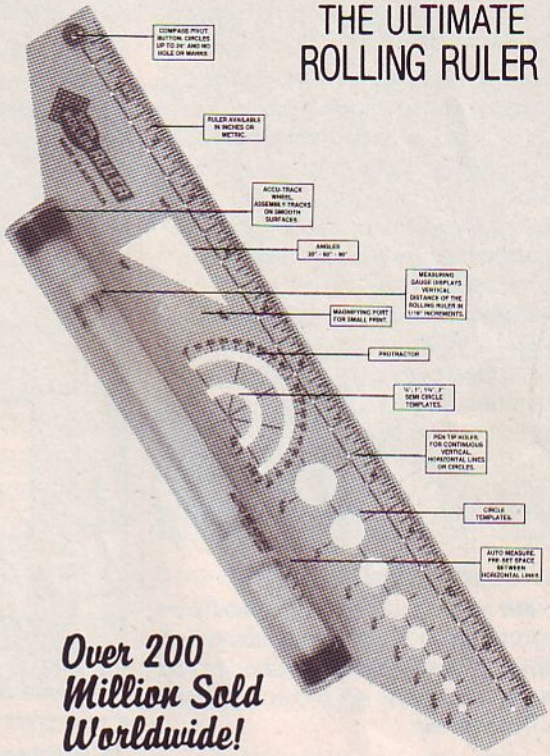

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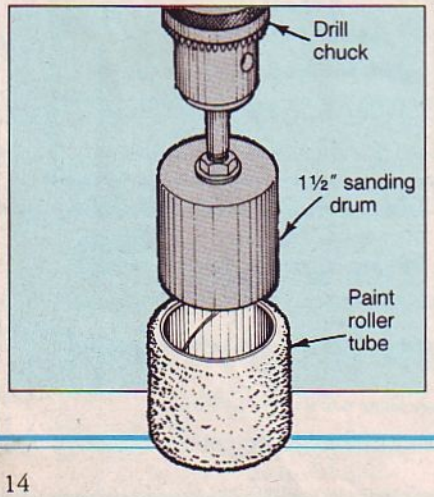
An economical buffer

A drill-mounted buffing wheel can perform all sorts of workshop polishing chores. But, at about $10 apiece, the cost of several wheels really adds up.

TIP: Cut a paint-roller tube into lengths to fit over a 1½" sanding drum (thick naps work best). Slip these fuzzy tubes onto the drum and polish away.

—Mark D. Hoover, Poway, Calif.



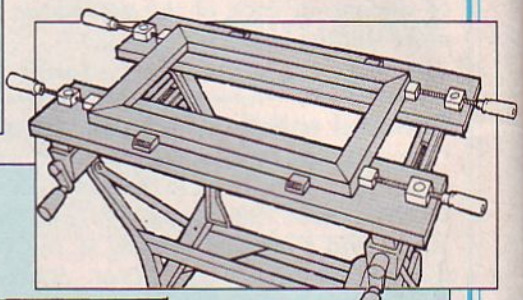
Turn your Workmate into a framing clamp

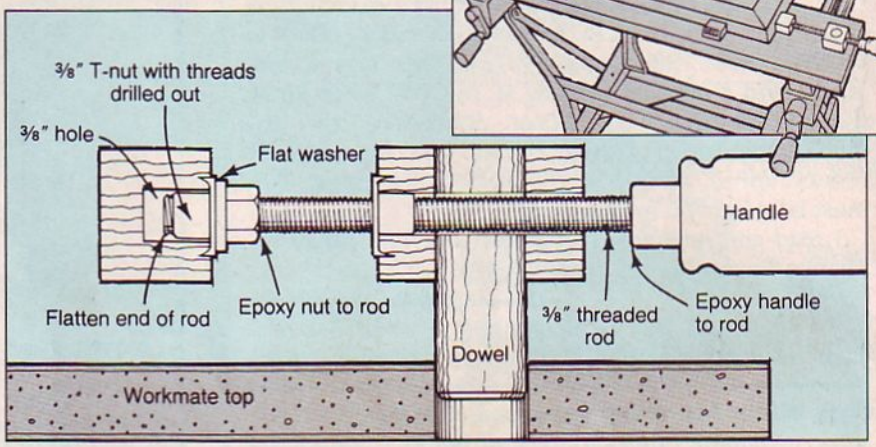
Black & Decker Workmates are just about the handiest shop accessory to come along since the sawhorse, but they do have their limitations. For example, the mechanism exerts clamping pressure in only two directions, so you still need pipe or bar clamps when clamping four-sided projects.

TIP: By fashioning four of the add-on blocks shown *below,* you can clamp frames and some odd-shaped workpieces with your Workmate. Size the dowel to fit the dog holes in your Workmate, and cut the threaded rod to a length that suits your needs (6-8" should do it). Note that you must flatten the end of the rod before adding the clamp block so the block doesn't fall off.

—Lyle Kruger, Effingham, Ill.

For his tip, Lyle receives a Skil model 5550 circular saw.



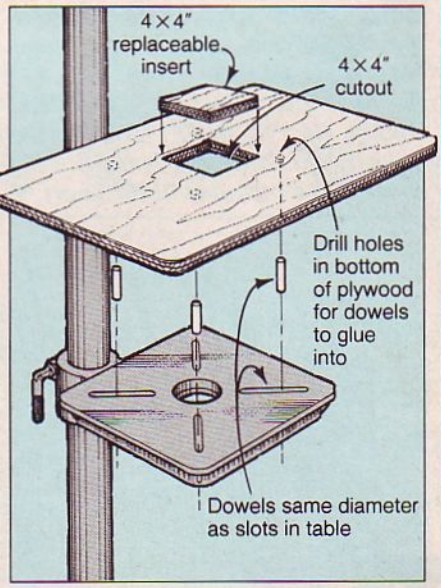


A better auxiliary drill-press table

Auxiliary drill-press tables enlarge your working area and eliminate the hassle of finding a scrap block to back up the workpiece. But, their centers quickly become chewed up. And, removing the auxiliary table takes time if you have to loosen several nuts.

TIP: Build an auxiliary table like the one at *right.* While you're at it, cut several of the 4×4" inserts so you always have a spare on hand. When one becomes full of drill holes, just slap in a replacement. Add dowels that tightly fit the press standard table, but still allow you to easily lift off the auxiliary table when necessary.

—Marvin Clore, Cut Bank, Mont.


4×4" replaceable insert
4×4" cutout
Drill holes in bottom of plywood for dowels to glue into
Dowels same diameter as slots in table

Continued on page 16

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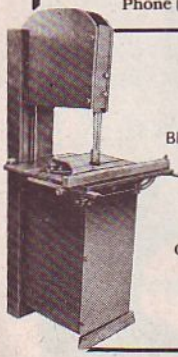

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TIPS FROM YOUR SHOP (AND OURS)

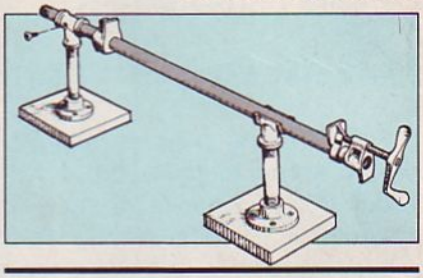
Continued from page 14

Elevated pipe clamps

Pipe clamps work great for edge-gluing cutting boards, tabletops, and the like, but it can be a chore to keep them from rolling on their sides as you work. And, elevating the clamps off the bench makes the job easier.

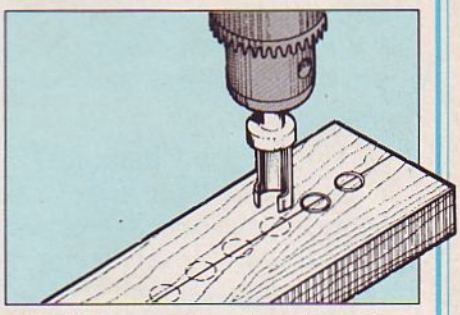
TIP: Assemble two pair of pipe-clamp holders from ¾" pipe and fittings such as the pair shown *below*. First, mount 6" nipples to ¾×6×6" plywood bases with flanges. For each pair, cut one T-joint in half, and drill and tap the other for a ¼" thumb screw. It helps to cover the pipe clamps with masking tape for protection from glue drips. Once the assembly dries, you can remove it from the holders and replace it with two more pipe clamps for your next assembly.

—Burl Rice, Topeka, Kan.



Surefire plug alignment

To hide wooden plugs, it helps to align the grain of the plugs with the grain of the workpiece. However, sometimes—particularly on small plugs—you can't tell which way the grain runs.



TIP: Before cutting the plugs, draw a pencil mark parallel to the grain as shown *above*. The mark guides you when gluing the plugs in place, and disappears when you sand the plugs flush.

—Richard Rentfrow, Raleigh, N.C.

Continued on page 18

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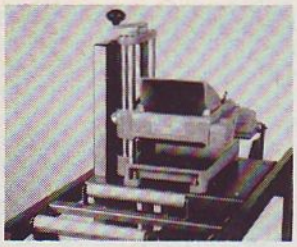
mold plane and edge



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TIPS FROM YOUR SHOP (AND OURS)

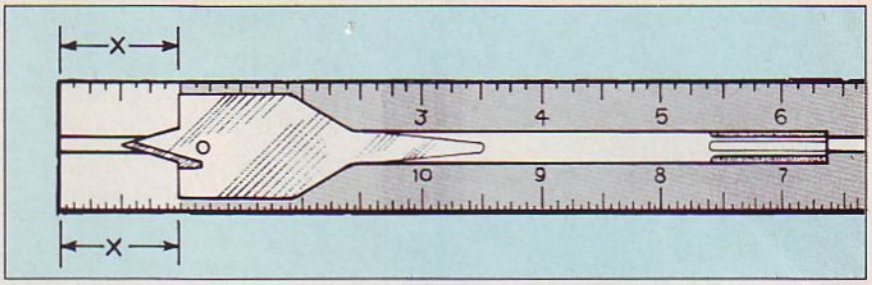
Continued from page 16

A quick check when sharpening spade bits

You can resharpen spade bits relatively easily, but checking your accuracy can pose problems.

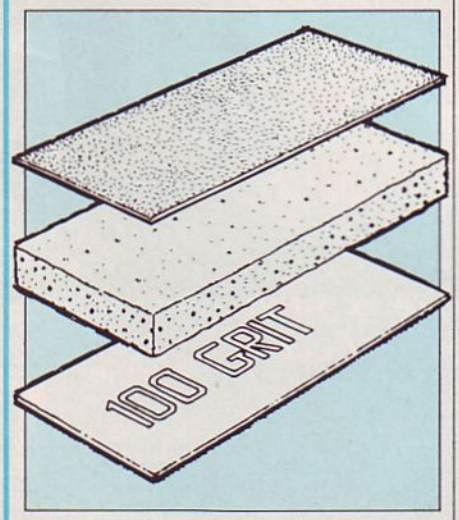
TIP: To make sure that you sharpened both sides of the bit to the same length, just lay the bit into the groove of your combination square's blade. The distances marked by "X" in the drawing *below* should be equal (1″ in this example), with the cutting edges parallel to each other.

—Ted Wonderly, Mertztown, Pa.



Assemble a cheap-to-make flexible sanding pad

When sanding contoured surfaces such as dowels or chair legs, a flexible sanding pad helps you reach nooks and crannies, and doesn't wear out as fast as plain sandpaper. But, the commercially available models cost a buck or two.



TIP: You can save some of your hard-earned money by attaching 2½×4½″ sheets of sandpaper to similar-sized pieces of carpet-underlay foam as shown *above*. I put sheets of differing grits on each side of the pad, and secure them with spray adhesive.

—Ray Sweeney, Elizaville, N.Y.

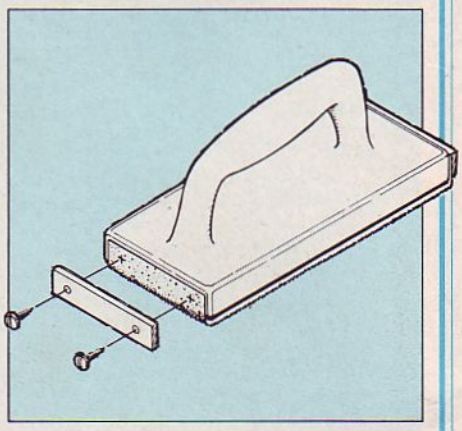
Double-duty sanding/push block

Safety-conscious woodworkers really appreciate push blocks, especially when surfacing stock on a jointer. A slight modification to this accessory helps it serve other shop tasks.

TIP: Cut a sheet of sandpaper to fit your push block and secure the abrasive with a strip of hardwood and self-tapping screws as shown *below*. I use a Shopsmith push block (part No. 513711, about $5.50), two ¼×½×3″ hardwood strips, and ¾″ screws. A half sheet of paper (3½×9″) fits perfectly.

Now, you can sand large surfaces comfortably. Leave the paper attached for a better grip when using the tool as a push block.

—Robert Maurice, Hartford, Wis.



Continued on page 20

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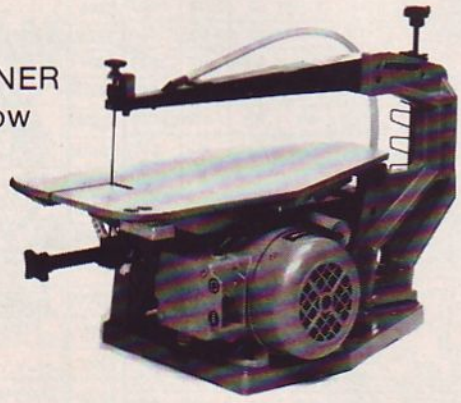

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TIPS FROM YOUR SHOP (AND OURS)

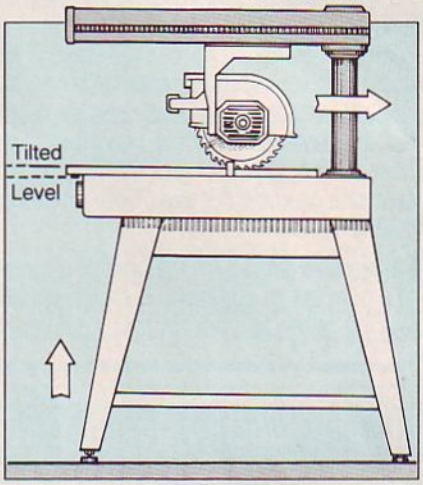
Continued from page 18

A one-minute fix for a creepy radial-arm saw

Radial-arm saws rate as one of the most dangerous machines in your shop, and they can be especially threatening if the blade carriage tends to creep forward on its own.

TIP: Tilt the machine backwards slightly by elevating the front legs as shown *below*. If the base doesn't have pads that elevate by turning them, add shims.

—David M. Johnson, New Springfield, Ohio



MORE TIPS FROM OUR WOODWORKING PROS

- To learn how to disguise wood imperfections such as worm holes and cracks, see page 30.
- Our bench hook on page 34 will help you relief-carve safely and comfortably.
- See the note on page 36 for a simple and inexpensive way to stain wood with a child's watercolor set.
- Bend thin wood using the hot-water-and-form technique described on pages 54 and 55.
- Make your own lightweight anvil from scrap 2x4 and a pipe. See page 56.
- On page 64 you'll see how we laminated square turning blanks from four smaller pieces of wood.

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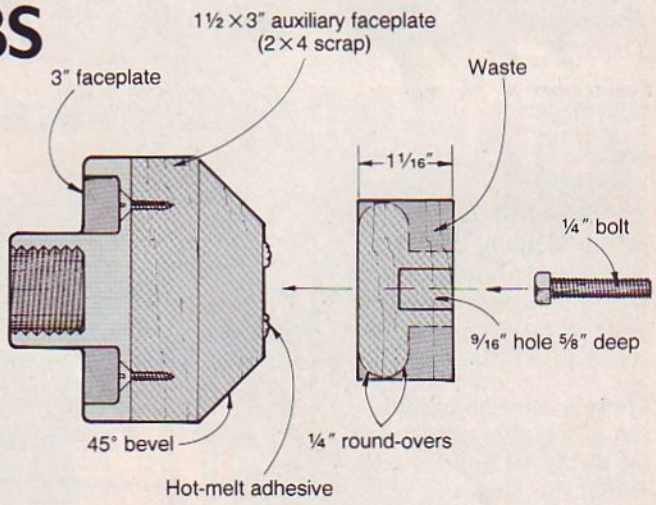


You can sink a lot of money in knobs with threaded studs such as those used on the router-table fence shown *above*. "Why not make them?" we asked ourselves the other day when we needed four knobs for a project.

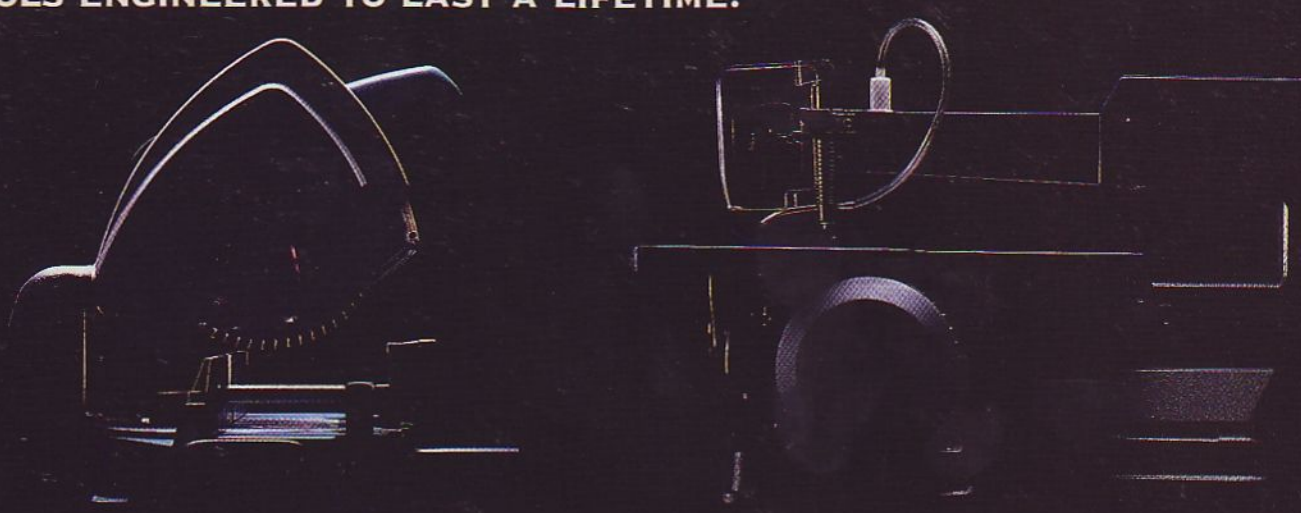
Project Design: Marlen Kemmet

To make your own knobs, start by mounting a piece of oak to an auxiliary faceplate as shown *above*. Then, using a skew or small gouge, turn the knob to shape and sand smooth. Next, drill a 9⁄16" hole with a Forstner bit, and epoxy a ¼" hex-head bolt into the hole. Before epoxying, check that the bolt fits the mating T-nut and that the exposed thread will be long enough to go through the stock and into the T-nut. Our knobs measured 2" in diameter.

Photograph: Bob Calmer

Illustration: Jamie Downing

TOOLS ENGINEERED TO LAST A LIFETIME.



DUST REMOVAL SYSTEM, AND A NEW 10″ MITER SAW THAT'S BEEN REDESIGNED TO PRODUCE THE LARGEST CUTTING CAPACITY IN ITS CLASS — EVEN HANDLING 2″x 6″ STOCK AT 90°. THE RYOBI "WORKAHOLICS"—PRECISION-CRAFTED TO DELIVER STATE-OF-THE-ART PERFORMANCE.

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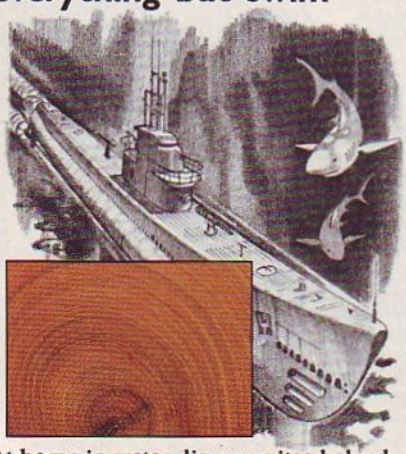
WOOD ANECDOTE

LIGNUM VITAE

The stock that does everything but swim



At home in water, lignum vitae helped submarines run quietly.

An explosion rocked the humid night. Thrown to the deck, the young Confederate crewman escaped the projectiles flying everywhere. But not all hands were as lucky. Glancing into the boiler room, he found the first mate lying still. Was it a mortar shell that had felled him? It couldn't be; they were alone on the ocean.

The blow that struck the Confederate cruiser *Georgia* on that fateful evening in 1864 came from no enemy gunner. Instead, the awesome burst and devastating shrapnel was from shattering wood.

During the early days of oceangoing steamships, shipyards made many engine cogs and shafts of lignum vitae, an iron-tough wood so heavy it sinks in water. Unfortunately, crews found out that the wood also comes apart under extreme pressure when combined with more than 150° heat—as was created in the engine room when the *Georgia* mate stoked the fire through the open boiler door.

Incidences such as this caused shipbuilders to abandon lignum vitae in machinery aboard surface vessels. However, because sea water naturally lubricates the wood, lignum vitae was adopted as the material for silent-running propeller shaft bearings in submarines and has only recently been displaced by space-age substances.

Above sea level, lignum vitae's remarkable hardness made it perfect for chopping blocks, block-and-tackle assemblies, and casters. Early woodworking tool manufacturers relied on the wood for mallets, plane soles, and bandsaw guide blocks. And, should you happen on a bowling ball from the 1800s, expect that it, too, will be rollable, rockhard lignum vitae.

Illustration: Jim Stevenson

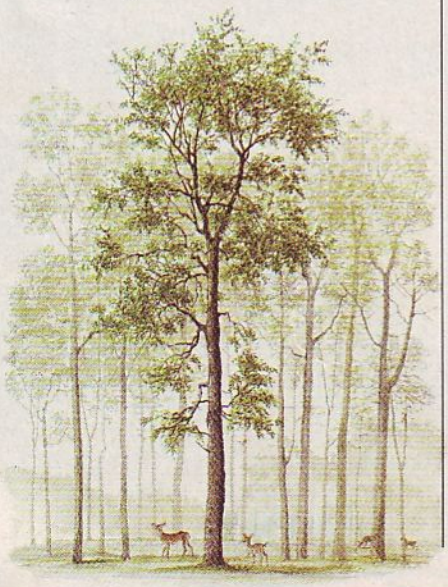
THE #1 MAGAZINE FOR HOME WOODWORKERS
JANUARY WOOD® 1991

Black CHERRY

The poor man's mahogany

Although today we think of black cherry as one of the classic furniture woods, it wasn't always that way. Settlers in the Appalachian Mountains, for example, valued the tree's fruit more than its wood. They dubbed the tree "rum cherry" because from its dark purple cherries they brewed a potent liquor. Also, black cherry's inner bark contributed to tonics and cough medicines. Elsewhere, though, the wood was more appreciated.

Early New England furniture-makers often found the price of fashionable Honduras mahogany beyond reach and turned instead to native black cherry. Because black cherry wood eventually darkens to a deep reddish brown, these frugal craftsmen mixed what they called "New England mahogany" in with the real thing.



Today, cherry still appears in classic reproductions of colonial-style furniture. It has also climbed in popularity as a new look in kitchen cabinets.

Natural range

Wood identification

Black cherry (*Prunus serotina*) ranges from the Missouri River east to the Atlantic Ocean, but the species develops best in the Allegheny and Appalachian Mountains of the East. There, in forest conditions, trees grow to 100′ heights and 4′ diameters.

Young black cherry has satiny, dark, red-brown bark that develops into gray flaky scales as the tree matures. Oval-shaped, pointed leaves appear in the spring. Then, before the new, reddish leaves turn dark green, flowing clusters of white flowers bloom. By late summer, purple, pea-sized cherries appear. Birds eat them and distribute the seeds.

The heartwood of black cherry has a light pinkish-brown color when freshly cut. Sunlight deepens it to a dark orange-red. The cream-colored sapwood, however, never darkens to match.

Black cherry's straight, close, and finely textured grain generally features a gently waving figure. Sometimes, trees yield boards with rippled or quilted patterns. Dark spots—actually gum pockets—often appear in black cherry heartwood. Avoid selecting these boards, or at least keep pockets to a minimum.

At 35 pounds per cubic foot, black cherry weighs less than maple. And, it is two-thirds as hard but just as strong and stable.

Uses in woodworking

Rated as a fine cabinet and furniture stock by centuries of craftsmen, black cherry has few limits. It takes abuse as tables, desks, and chairs. Black cherry also becomes musical instruments and architectural paneling, as well as millwork. It's only moderately durable outdoors.

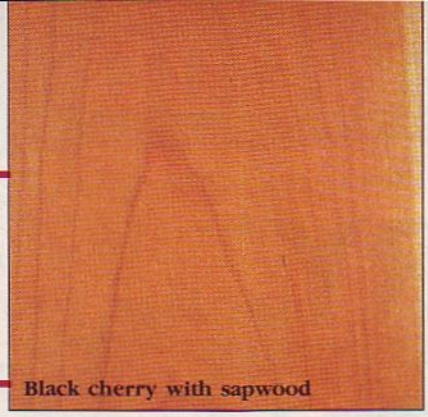
Availability

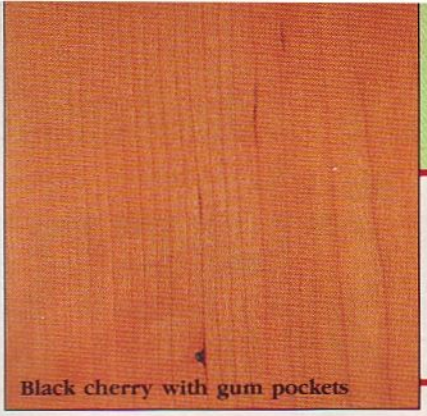
At about $3 per board foot, black cherry costs approximately the same as red oak. Outlets farther from the source will, of course, charge more. You also can buy black cherry plywood—usually almost twice the price of a sheet of red oak. Plain-sliced veneer costs about 50 cents per square foot; figured veneer runs slightly more. Turning squares, buttons, and plugs also are available.

Continued

PERFORMANCE PROFILE

black cherry
(Prunus serotina)


Black cherry with sapwood


Black cherry with gum pockets

Machining methods

Select boards with a minimum of sapwood and gum pockets. *Then, remember these tips:*

- Black cherry planes extremely well due to its fine, close grain, but take light cuts in jointing. Dull blades burnish it.
- We've found that for some reason steel blades burn black cherry less than carbide-tipped blades. Avoid burning by feeding the stock without hesitation. In crosscutting, carbide blades outperform steel.
- Except for the common twist drill, any type of bit does well. However, use slower drill press speeds (about 250 rpm). A pause will burn the wood.
- In routing, black cherry doesn't chip or tear like maple, but it will burn during a split-second hesitation. Take light passes without stopping.
- All types of woodworking adhesives work well, as long as you carefully control squeeze-out. It mars a clear finish more jarringly than on other woods. To check, wipe joints with thinner.
- Because black cherry is nearly as hard as maple, it scratches easily in cross-grain sanding, so never overlap strokes where joints bring the grain together at right angles, such as the corner of a face frame. For best results, use a cabinet scraper to remove scratches between grit changes.
- You probably won't want to stain cherry, except to blend sapwood with darker heartwood. For control, we recommend aniline dye. To hasten cherry's natural tendency to darken, mix a solution of 1 or 2 ounces of sodium hydroxide (lye, poisonous) to a gallon of water, brush it on the wood, then neutralize with water. Experiment for shades.
- Although oil finishes and clear lacquers or varnishes work equally well on cherry, you'll get a smoother finish on this fine-grained wood if you thin the first coat to act as a sealer. Then, sand with 400-grit or 0000 steel wool after it's dry and recoat.

Carving comments

Although hard, black cherry takes detail and finishes beautifully. *For an eye-catching, natural-finish carving, follow these suggestions:*

- Flat-sawed wood has the most grain pattern; quarter-sawed boards (growth rings perpendicular to the width of the board), the least.
- Power-carving tools fit black cherry. Use carbide burrs.
- To remove small scratches on the finished carving, first sand with a coarse sanding drum followed by a fine sanding drum. Then, go over the piece with a coarse sanding disc, using a rocking motion. Hand-sand with 150-grit, then 320-grit.

Turning tricks

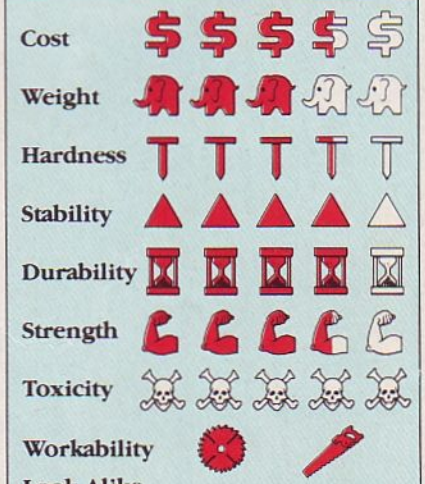
Cherry turns nearly effortlessy, as long as you use sharp tools to shear the wood. To sand, shut off the lathe and start with 150-grit, working only with the grain.

SHOP-TESTED TECHNIQUES THAT ALWAYS WORK

Any exceptions, and special tips pertaining to this issue's featured wood species, appear under headings elsewhere on this page.

- For stability in use, always work wood with a maximum moisture content of 8 percent.
- Feed straight-grained wood into planer knives at a 90° angle. To avoid tearing, feed wood with figured or twisted grain at a slight angle (about 15°), and take shallow cuts of about 1/32".
- For clean cuts, rip with a rip-profile blade with 24–32 teeth. Smooth crosscutting requires at least a 40-tooth blade.
- Avoid drilling with twist drills. They tend to wander and cause breakout. Use a backing board under the workpiece.
- Drill pilot holes for screws.
- Rout with sharp, preferably carbide-tipped, bits and take shallow passes to avoid burning.
- Carving hardwoods generally means shallow gouge bevels—15° to 20°—and shallow cuts.

BLACK CHERRY AT A GLANCE



Look-Alike
beech, Honduras mahogany

Compiled with woodworkers Jim Boelling, Jack Settle, C. L. Gatzke, carver Rick Beyer, and turner Rick Reeves

BOOMER'S PEOPLE

A California carver mingles memories with mountain manzanita

A carving seen while teaching high-school industrial arts in Hawaii changed Bob Boomer's life. "It rekindled a childhood interest," says Bob.

Now, the Ahwahnee, California, carver gets top dollar for his work, and doesn't regret giving up a teaching career. "I've never looked back," he says.

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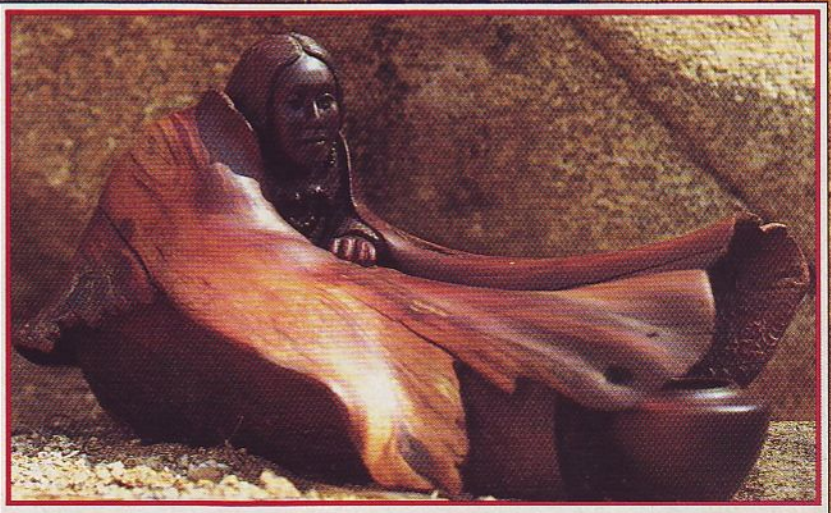


"Waiting" depicts the Indians of Southern California's Mojave Desert.

BOOMER'S PEOPLE

Two miles up the mountain road from his Ahwahnee, California, home, Bob Boomer lets up on his truck's accelerator, swings into a small clearing, and stops. Getting out, the lanky carver strides toward a large stone surface in the ground. Five, maybe six, feet across, it resembles a tabletop set in the earth.

"Here's where the Indians camped, and this is where they ground their acorns," Bob says. Nodding toward the rock, he points out a dozen or more cylindrical holes about the diameter of a coffee mug and twice as deep. "They pounded the acorns with stones in those holes—like working a mortar and pestle," he explains. "Then, they poured water through the ground meal to remove the tannic acid. When the bitterness was gone, the meal was ready to cook into mush. I still imagine the Indians kneeling here, pounding acorns." A smile dances across his boyish face as he adds, "I've been told it tasted a little bit like dirt."

Bob, in fact, does more than conjure up images of Native Americans for his mind's eye, he regularly depicts them in his carvings. "I'm not an expert on Indians by any means, but they've always fascinated me," says the 47-year-old craftsman. "I've done Hopi, Navajo—Southwest Indians—and even Hawaiians, because they were colorful and people seemed to recognize them better. But when I do a seated piece, such as an Indian grinding acorns or with a basket, they'll be Indians from California tribes. They're the ones that visited places like this."

Right: **For this Hawaiian dancer, Bob chose a manzanita chunk with the perfect shape to represent movement.**

Far right: **"Wind Mother," from red cedar root, with a wing forming a blanket, has the natural movement Bob likes in his raw material.**

The San Joaquin shapes a carver

Bob grew up on a small farm along the Brenda Slough in the agriculturally rich San Joaquin Valley, near Chowchilla. "The town was named after a tribe of Indians from the Sierra Nevada Mountains. My father would take us camping and trout fishing up there. In some places," he recalls, "we would find lots of obsidian chips, left behind from the Indians' arrowhead making—and, if we were lucky, an arrowhead."

The carver has a vivid memory of those teenage times and Indian sign, but no less so the opportunities he had to work wood. "As kids, we helped on the farm and at my uncle's ranch. I drove the tractor, plowed, irrigated, and picked cotton," he says.

"We didn't have television until I was 13 or 14, so for entertainment," Bob continues, "we'd make something in my Dad's basement shop. Or, my grandfather's—he was a cabinetmaker on the side. I remember walking into his woodshop and smelling walnut, maple, and oak."

The young California farm boy learned to whittle, carving patterns he found in *Boy's Life* magazine. But, during senior high school and college Bob abandoned carving, only rekindling an interest in 1968, the year he and Carol, his wife, finished their degrees and taught in Hawaii.

After returning from the islands, Bob took a teaching position in Madera, California. There, his pursuit of carving, and his production, grew. "By my eighth year, I made the equivalent of half my teaching salary from carving, and decided to try it full-time."

Now, as a successful carver, Bob portrays more and more subjects that he's familiar with, such as his California Indians, field workers picking grapes or cotton, a woman behind a pioneer plow. "I really give my uncle credit for instilling in me the love of manual labor," Bob says, in reference to the past. "Now, that all ties in with the figures I do of people working. It's a simple existence, there's beauty in it, and I'm drawn to those subjects. And, it's a perfect match for the wood."

People of the soil from mountain stock

Bob's hands create the carvings. Only nature, however, could perfect the wonderfully multicolored and irregularly shaped manzanita that he retrieves from the nearby Sierra National Forest. Growing at elevations from 3,000′ to 8,000′, manzanita *(Arctostaphylos pungens)* primarily appears as a 4′- to 6′-tall shrub, capable of offering only its root burl to woodworkers. Yet, in areas on the west side of the Sierra Nevada, just below the grandness of Yosemite National Park, manzanita grows to tree-like proportions. And, it's these twisted limbs—sometimes as big around as a man's thigh—that Bob seeks.

"Under the Forest Service's firewood permit," he notes, "I can only cut dead and down wood—up to two cords a year. So I drive around looking for big manzanita that's completely dead, with a minimum of real wide cracks. And, the wood I cut has to have a natural flow or curve, not standard straight-grained stuff."

Continued

BOOMER'S PEOPLE

Bob doesn't worry about sealing the wood for seasoning. The natural cracks that developed when it dried on the mountainside become visual elements in his statuesque carvings.

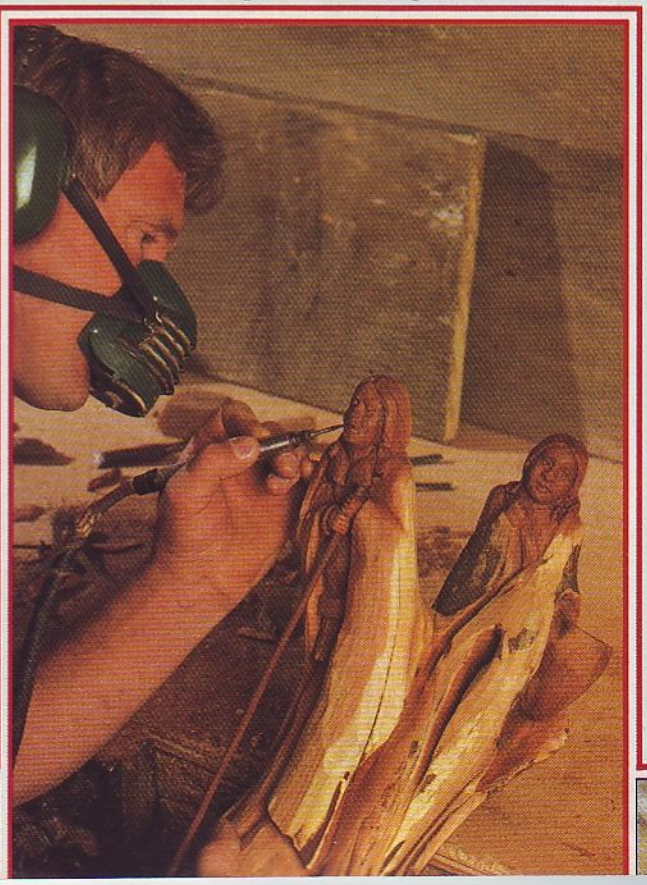
"Some holes, such as from bugs," he says, "just have to be filled, though. I do that by sanding at the belt sander to get some fine dust, then I mix it with epoxy, and press it deep into the hole. If there's a wide crack, but the piece is still pretty enough to carve, I drill a hole across the crack, and plug it with a manzanita dowel, then sand it flush. That keeps it from opening up any further. The plug ends up looking like a small knot."

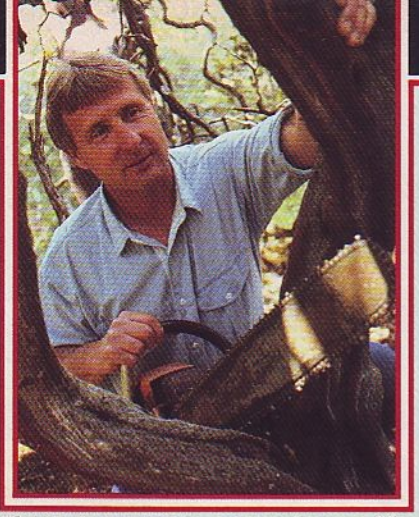
Sometimes, though, despite his hole-filling and crack-plugging, the wood surprises Bob. "Like on this piece," he says, sliding the edge of a carving chisel into a deep cut in a half-finished figure. "I started cutting here, and ants poured out! When that happens, I'll just throw it out, if it's not an exceptional piece of wood. A good one, I'll fumigate."

Since there's always a chance that dead, downed wood corrals tiny livestock, Bob has all of his carvings professionally fumigated with methol bromide (a pesticide used on California-grown fruit exported to Japan) in a pressure chamber at the U.S. Department of Agriculture facility in Fresno. "I have six or

Left: **"Homeward," a 22"-tall, Southwest-themed double-carving, may bring $3,000 to $4,000 or more in a gallery.**

Below: **Bob adds fine detail to his carvings in hard manzanita with a dental burr in a pneumatic handpiece.**





Above: **A mountain manzanita tree like this grows only at or above 3,500′ altitude. Short at 10′ tall, its branches may spread out 20′ in diameter.**

eight carvings fumigated at a time," he says. "After they're treated, I apply the finish."

Wood that moves for carvings that catch the eye

To most woodworkers, wood that moves implies instability. Movement, though, is exactly what this accomplished carver strives for. "I want my carvings to *look* as if they're about to do something, to have some movement," he comments. "It catches people's eyes."

Untrained in art, and limited in drawing skills except for rough sketching, Bob relies on video technology to capture the movement he wants in a carving. "I take my video camera down into the valley, and shoot workers picking grapes, for instance. Then, when I replay it through the VCR, I stop-frame the scene and do a quick sketch of the movement," he explains.

Sometimes, Bob has the subject for a carving all sketched, then tries to find a piece of wood that will work. "At other times, it's just the opposite—I find a piece of wood that's great and rack my brain trying to see what that form could be doing," he says. "With my seated Indian woman [see page 29], for instance, I found a cedar root that swept out like that, so the flowing wood became her blanket fluttering in the wind. You see, a bust, a head, is not a challenge if all I have to do is carve the wood away. There's a big difference between working a face somewhere into the wood, instead of transforming all the wood into a face."

The carvings standing around Bob's rustic workshop—none more than 24″ tall—reflect the combination of natural wood and what he decided to add to it. At one end of his bench stands an unfinished pair of Indian women, the figures hewed from a double-trunk projection of manzanita. Near the wood-burning stove, next to a pile of stock yet to be touched, is a semi-completed figure of a Hawaiian dancer, the head and naked torso shaped from dark heartwood and contrasting with untouched sapwood.

"I try to make the natural wood and my carving on it go together," Bob points out. "They have to balance. Sometimes, I just want to preserve as much of the beautiful color and form of the wood as possible, but I always have to ask, 'Just exactly where on the wood will I do my carving?' "

Manzanita meets the mallet

Bob began carving with a mallet and chisels, and stuck with them when he turned professional. After a year, though, he realized that he had to increase his production just to make ends meet. His answer—a Bosch die grinder to rough out the hard manzanita. "I was doing OK, improving my work with the tools I had. Then, I had a visitor," Bob recalls.

His visitor, a middle-aged German man, apprenticed as a child to a master carver. "He knew which tools to use and how to use them," he says. "He was outspoken, critical, and a bit arrogant. When he asked to see my shop, I couldn't say 'No.' Then, he dissected me pretty severely, but in a good way," Bob comments, making a playful grimace. "He looked at my tools and said 'No good' about everything except the grinder. Yet, he noted that I didn't have the right cutters."

As Bob remembers it, the drop-in carver then fetched a tool catalog from his car. "He pointed out the carbide, spiral cutters that are safer, and the right shapes. From then on, my work was better."

That he turns to grinders and other power tools to carve doesn't phase Bob a bit. "I'm no purist," he admits. "With the 30,000-rpm die grinder and a spiral cutter, I can remove wood quickly. I still use a mallet and 1″ framing chisel once in a while—and can take off wood nearly as fast."

For detailing, Bob bought a Dotco pneumatic handpiece (usually used for industrial deburring) and a variety of bits, including dental burrs for extremely fine work on faces. He powers it with a compressor that, because of its noise, sits about 30 yards away from the shop. The air arrives via galvanized pipe.

Sanding consumes about 75 percent of the time Bob spends on each of his works, even though his carvings feature some natural, untouched surfaces. To remove tool marks, he starts with 100 grit. Then, he moves on to 180 grit, 220 grit, and before finishing, 0000 steel wool. To get into detailed areas, such as on a face, Bob tapes sandpaper around a piece of vacuum hose slipped over a section of ¼″ steel rod inserted in the chuck of a portable drill. "And, because I was going through so many drills," he notes, "I switched to an industrial-grade one that turns at 4,000 rpm." Bob also saves money by cutting his own sanding disks. He attaches them with rubber cement to the face of the drill insert.

"I've tried all types of clear finishes for the manzanita," Bob remarks concerning his final step. "Watco oil seems to work best. I put on one heavy coat, wipe it off after 30 minutes, then put a second coat on several days later. I don't want too much shine. It would take away from the wood—and my people."

Written by Peter J. Stephano Photographs: Dan Sullivan

CARVE A CANVASBACK

Drake and hen wall plaque

When Jim Barnett, a local carver, showed me his duck wall plaque, I was impressed, but skeptical. I have a hard time carving the Thanksgiving turkey, much less this eye-catcher. "Not to worry," Jim assured me. "All you need are just a few carving tools, one piece of ¾" stock, a child's watercolor set, and some step-by-step instructions." Sure enough, within two hours, I had my project all carved and ready for finishing. I was so pleased with the results, I decided to present the carving to my father, an avid hunter.

Marlen Kemmet

How-to Editor

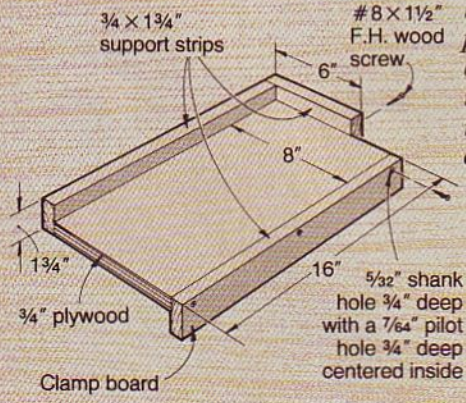
Cut the stock and transfer the pattern

1 Cut a piece of ¾"-thick stock to 5" wide by 14½" long. (We used butternut; see the Buying Guide for our source. You also could select walnut, sugar pine, basswood, chestnut, white pine, jelutong, or Ponderosa pine.)

2 Mark a reference line 1" from the bottom edge of the blank. With carbon paper, transfer the full-sized Duck pattern on page 36 to the carving blank, aligning the bottom of each duck's body with the marked reference line.

3 Rout or cut a 45° chamfer along the face edges of the blank.

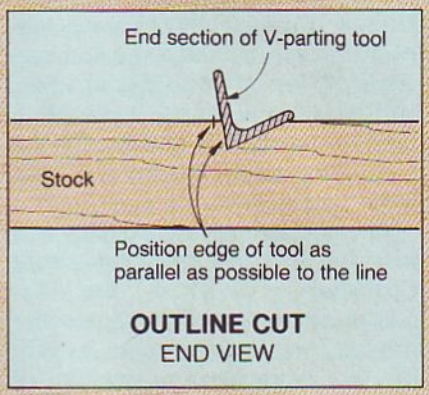
4 Using the full-sized pattern for reference, mark an oval reference line around the duck-body outlines. You'll need the oval for cut locations when removing the background material later.

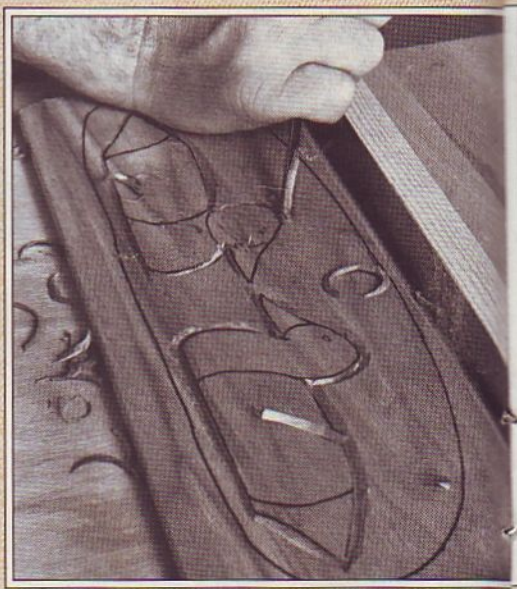


Let the carving begin

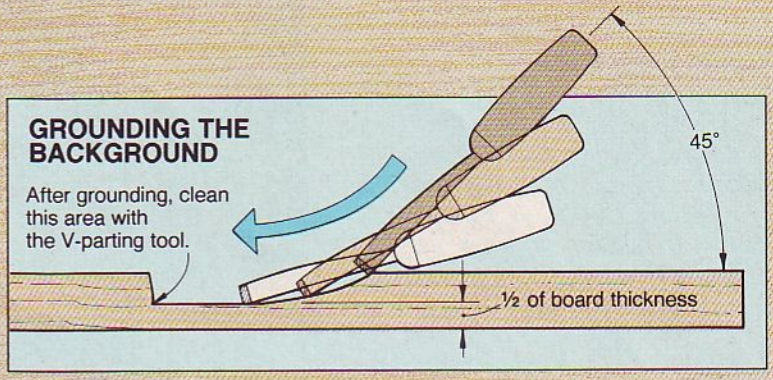
***Note:** Relief carvers employ a variety of setups to secure their workpieces. We prefer a bench hook like the one shown at left. By placing your carving blank on the base, you can comfortably carve in several directions before turning the blank around. Secure the clamp board in the jaws of your vise to hold it steady. Always carve toward one of the support strips—never toward your body.*

1 With a 3/16" or ¼" V-parting tool, cut on the outside of the marked line to carve the outline of both ducks as shown in the photo at *right*. See the Buying Guide at the end of the article for our source of tools. See the drawing *above* for reference when angling your tool to make the cut. Do not carve away the line. If you're right-handed, drive the tool with your right hand and guide the tool with your left. Jim Barnett, the carver shown in the





Cutting just outside the marked outline, use a V-parting tool to outline both the drake and hen bodies.



photos throughout this article, happens to be left-handed. (We made our first outlining cuts about ⅛" deep. Then, we carved a second and third set of cuts, deepening the groove to about ⅜".) The normal cutting depth for a low-relief carving is half the thickness of the wood.

2 With a ⅜" or ½" no. 7 gouge, remove the stock (a process called grounding) between the oval reference line and V-groove outline as shown in the photo *below*. To make these cuts, start just on the *inside* of the marked oval reference line, and with the scooping motion shown in the drawing titled Grounding the Background Cuts, push the gouge into the wood at about a 45° angle. Lay the tool nearly flat as you take out the long slices. Do not make the bottom of the grounding cut deeper than the V-grooved outline cuts.

3 Utilize the V-parting tool to remove splinters at the end of the gouge grounding cuts and next to the V-cuts where shown on the drawing *above*.

4 With a ⅜" no. 3, 4, or 5 gouge, make shallow cuts to round over the edges of both duck bodies as shown in the photo *below*.

5 Using a V-parting tool, make a shallow V-cut for the lower mandible (a duck's lower bill) on each duck. See the full-sized Duck pattern on the following page for reference. Utilizing the same tool, make a shallow cut for the nostril on each bill. Then, make an even shallower cut where the bill meets the head (this cut separates the head and bill, and simplifies painting the ducks later).

6 With a ⅜" no. 6 gouge, make a single pass to form the eye channel and cheek. Next, use the gouge to form the neck recess as shown in the photo *below* and located on the full-sized pattern.

7 With the V-parting tool, make three cuts to form the wing feathers on the back of each duck body. Repeat the process to form the tail feathers.

8 Utilizing the ⅜" no. 5 gouge, smooth out the tool marks on each duck. Make very shallow cuts to remove the high spots.

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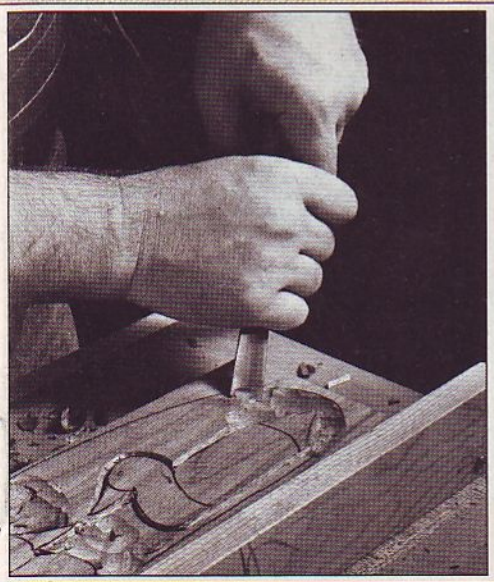
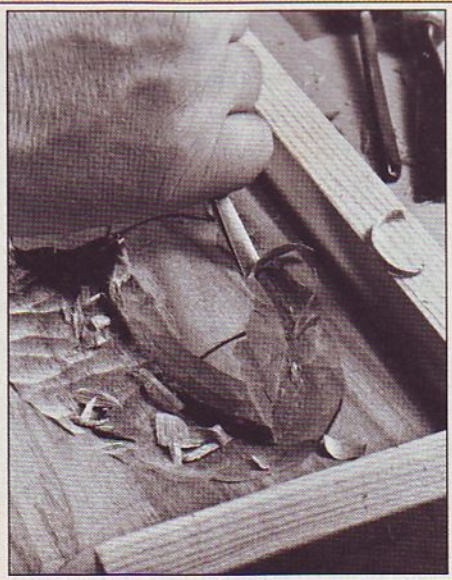
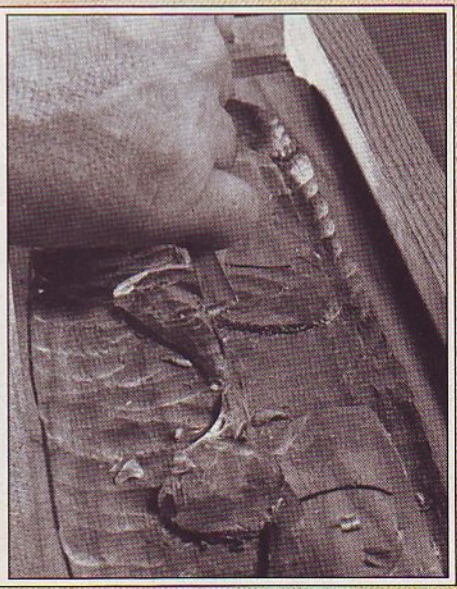


With a ⅜" or ½" gouge, start just inside the marked oval to remove the background next to the duck.



Make shallow cuts with the gouge to round over the outside edges of both duck bodies.



Use the ⅜" no. 6 gouge to form the neck recess. Start at the neck center and work to the outside.

CARVE A CANVASBACK

Color brings the ducks to life

Note: *We painted our ducks with a child's watercolor set and a ¼" brush. Lightly apply the paint to the wood to avoid hiding the grain. To darken an area, use several light coats instead of one heavy coat.*

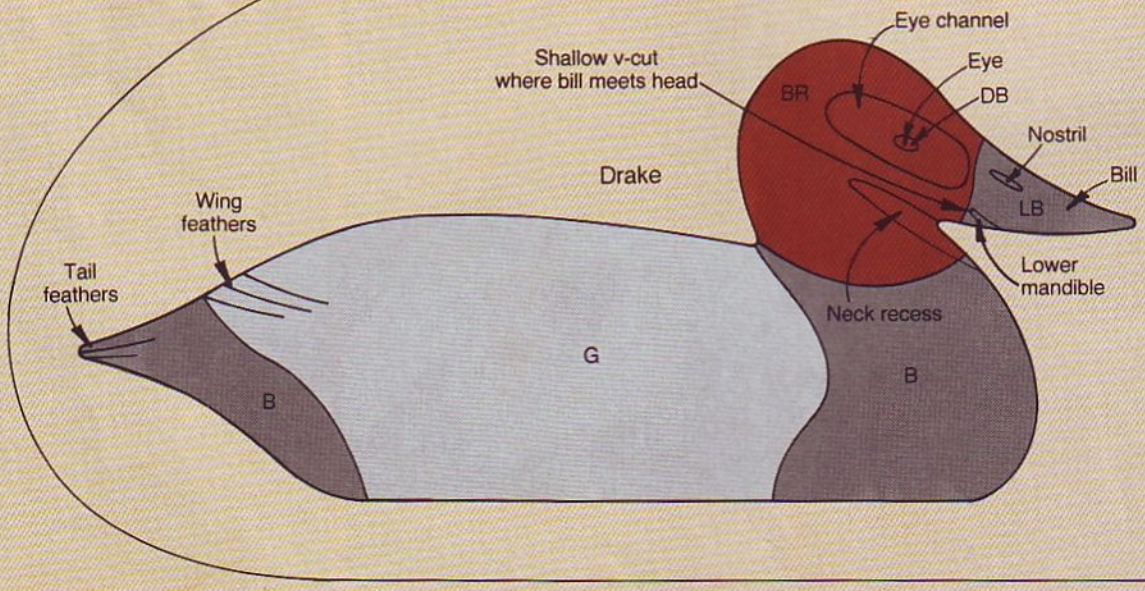
1 With a ¼" brush, paint the drake's breast and tail section black. Carefully paint the areas just next to the background to avoid having the paint bleed onto the background. If it does bleed, make a shallow cut with a gouge to remove the colored portion of the background.

2 Mix black and just a dab of yellow ochre to paint the bills. Mixing the yellow with the black

Paint the drake's eye red with a fine-tipped brush.

FULL-SIZED PATTERN

1×5×14½" butternut



results in a lighter, more natural-colored bills. Apply light coats. If the color is too transparent after it fully dries, add another coat.

3 Mix a light gray for the body portion of both ducks by blending white and just a touch of black. Brush on the paint.

4 Using burnt umber (medium brown), paint the head, breast, and tail area of the hen.

5 Mix red and burnt umber to form a brick-red color, and paint the drake's head.

COLOR KEY
B - black
LB - light black
G -gray
BU - burnt umber
BR - brick red
DB - dark brown

6 Using a fine-tipped brush, paint the drake's eye red and the hen's eye dark brown. To avoid smudging or running, let the paint dry completely before painting the pupils in the next step.

7 With a black fine-tipped felt marker or the tip of a fine brush, add the black pupil to each duck's eye. To prevent smudging, let the paint dry for an hour or two before applying the sealer (if necessary, you can speed up the process with a hair dryer).

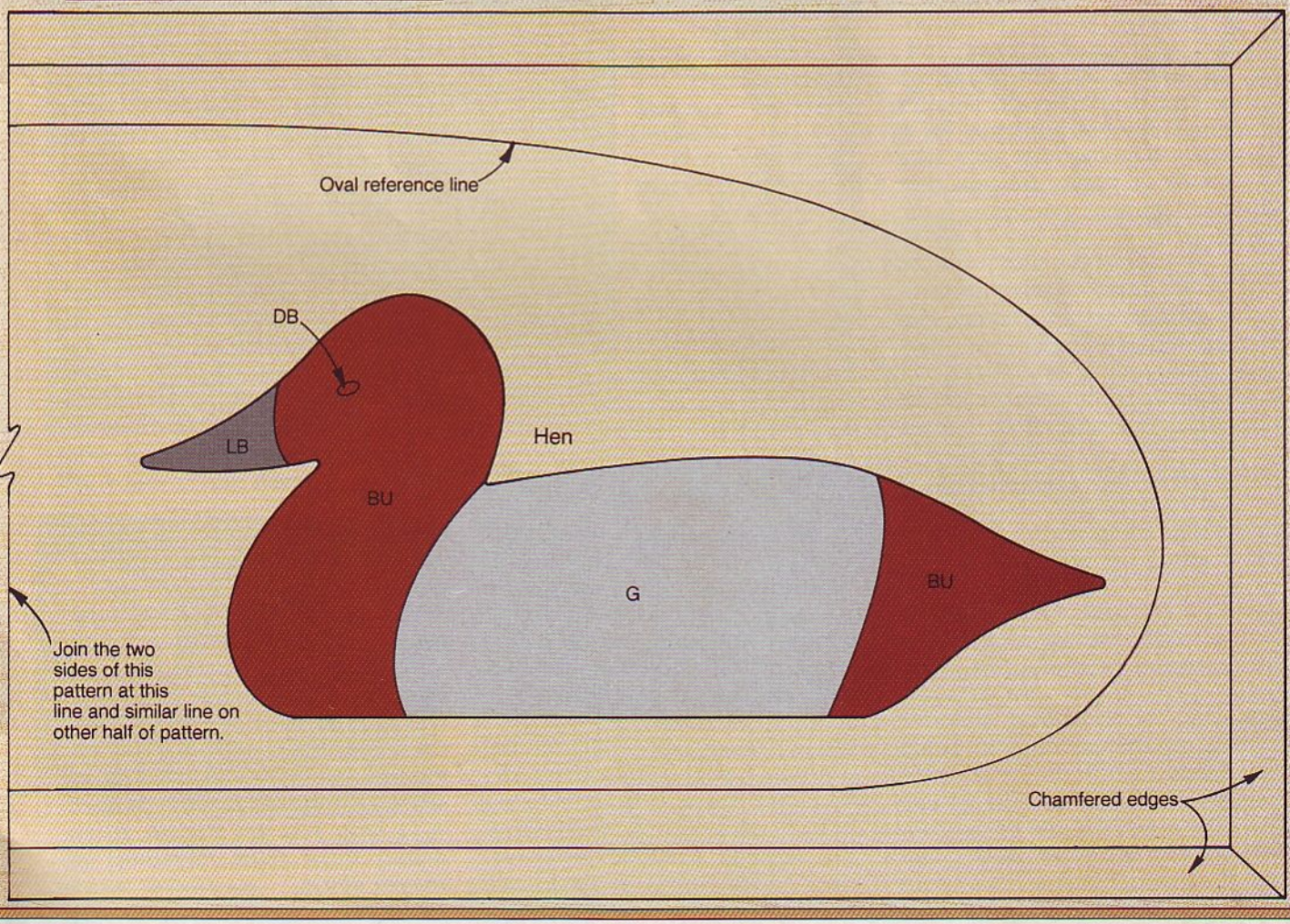
8 Lightly wipe on a finish. (We left the butternut natural and sealed the wood with Watco Danish Oil.) The oil slightly darkens the butternut, making the use of a stain unneccesary.

Supplies: ¾×5×14½" carving blank, water colors, clear satin finish (oils work well).

Buying Guide

- **Carving tools.** ¼" V-parting tool, catalog no. 18A52, $7.90. ⅜" no. 6 gouge, catalog no. 18C11, $7.90. ⅜" no. 5 gouge, catalog no. 18A41, $7.90. Complete kit of three tools for $19.95 ppd., catalog no. 18A61 (for the set), from Woodcraft, 210 Wood County Industrial Park, P.O. Box 1686, Parkersburg, WV 26102. To order, call 800-225-1153.
- **Butternut.** ¾×5×14½", $3.95 ppd. for one, or two for $6.95 ppd. Canadian readers add $2 per order for additional postage. The Woodcraft Shop, 2724 State Street, Bettendorf, IA 52722. Call 800-397-2278 or 319/359-9684.

Produced by Marlen Kemmet
Project Design: James R. Barnett
Photographs: Bob Calmer; Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

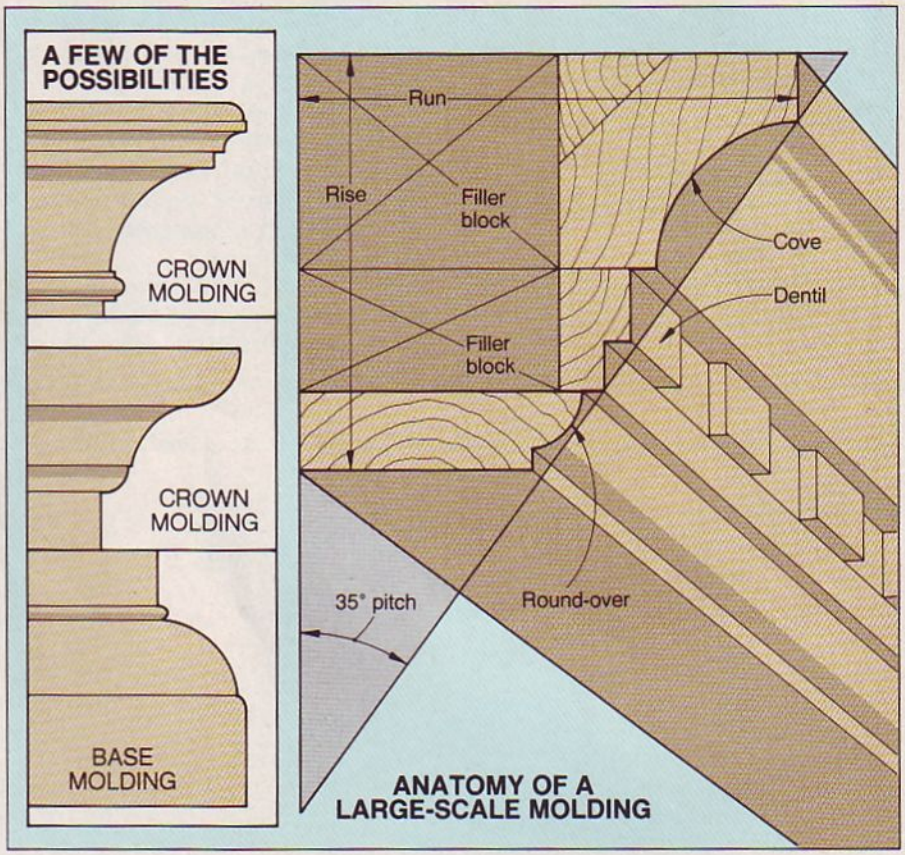


PROVEN TECHNIQUES FROM THE SHOP TESTED WOOD MAGAZINE SHOP

ADD THE CROWNING TOUCH TO YOUR PROJECTS

LARGE-SCALE MOLDINGS

Like the gingerbread trimmings on a Victorian home, large-scale moldings such as those at *right* lend stately elegance to projects from curio cabinets to clocks. And surprisingly, you don't need a lot of fancy jigs or tools to make them. Come along and we'll show you how it's done.

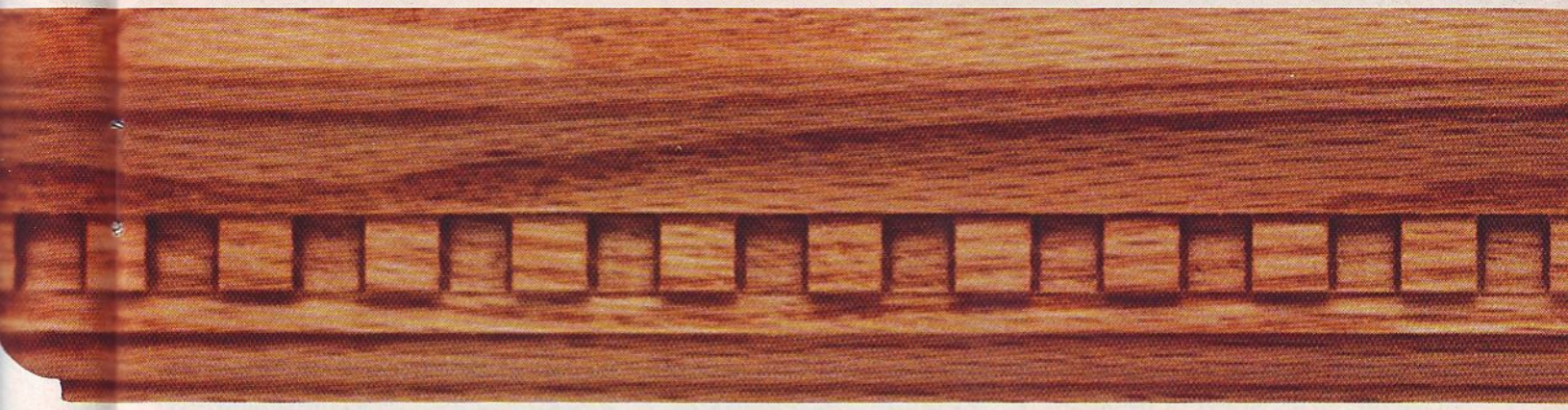


Although large-scale moldings appear complex, they're actually made up of several easy-to-make smaller moldings. It's not until you stack moldings together that they take on a look of "How did you ever do that?" To help you through the process, we'll show you how to plan the molding and how to shape its large components—coves, round-overs, bullnoses, and dentils—on your tablesaw. Then, you can combine these big pieces with smaller, router-made moldings for a stunning effect.

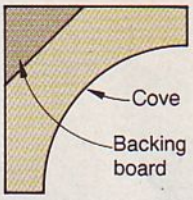
HOW TO PLAN A LARGE-SCALE MOLDING

With the help of the cutaway drawing *above right,* you can design your own moldings by following these guidelines:

- Depending on the size of your workpiece, you should first determine the **rise** and **run** of a descending or ascending molding. You want the molding to be in proportion with the overall dimensions of the workpiece, neither overpowering its design nor too small to make an impact. This can be a tricky task, so you might try browsing through your local furniture store for an idea of molding dimensions for pieces similar in size to your project.
- After determining rise and run, connect these perpendicular lines with an angled **pitch line** between 15° and 40°.
- Now, draw the profile of the molding, roughly following the pitch line for a smooth, flowing look. In this article, we'll show you how to produce these elements often found in large-scale moldings: **coves** (concave curves), **round-overs** (convex curves), **bullnoses**, and **dentils**.
- You can mix and match these elements until you come up with a pleasing effect. But, before you cut and assemble the molding, make a full-sized cardboard profile. Hold this pattern in place on your project as a final check of its size and proportion.
- To help you get started, we've drawn three more variations as shown *above.*



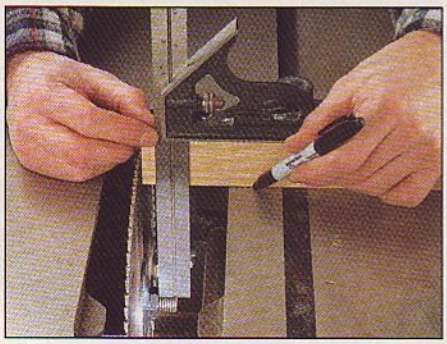
HOW TO CUT COVES WITH YOUR TABLESAW



Many large-scale moldings have fairly large coves plus several smaller moldings to enhance this prominent feature. Armed with the step-by-step instructions *below,* you can cut any of six different-sized coves shown on the next page.

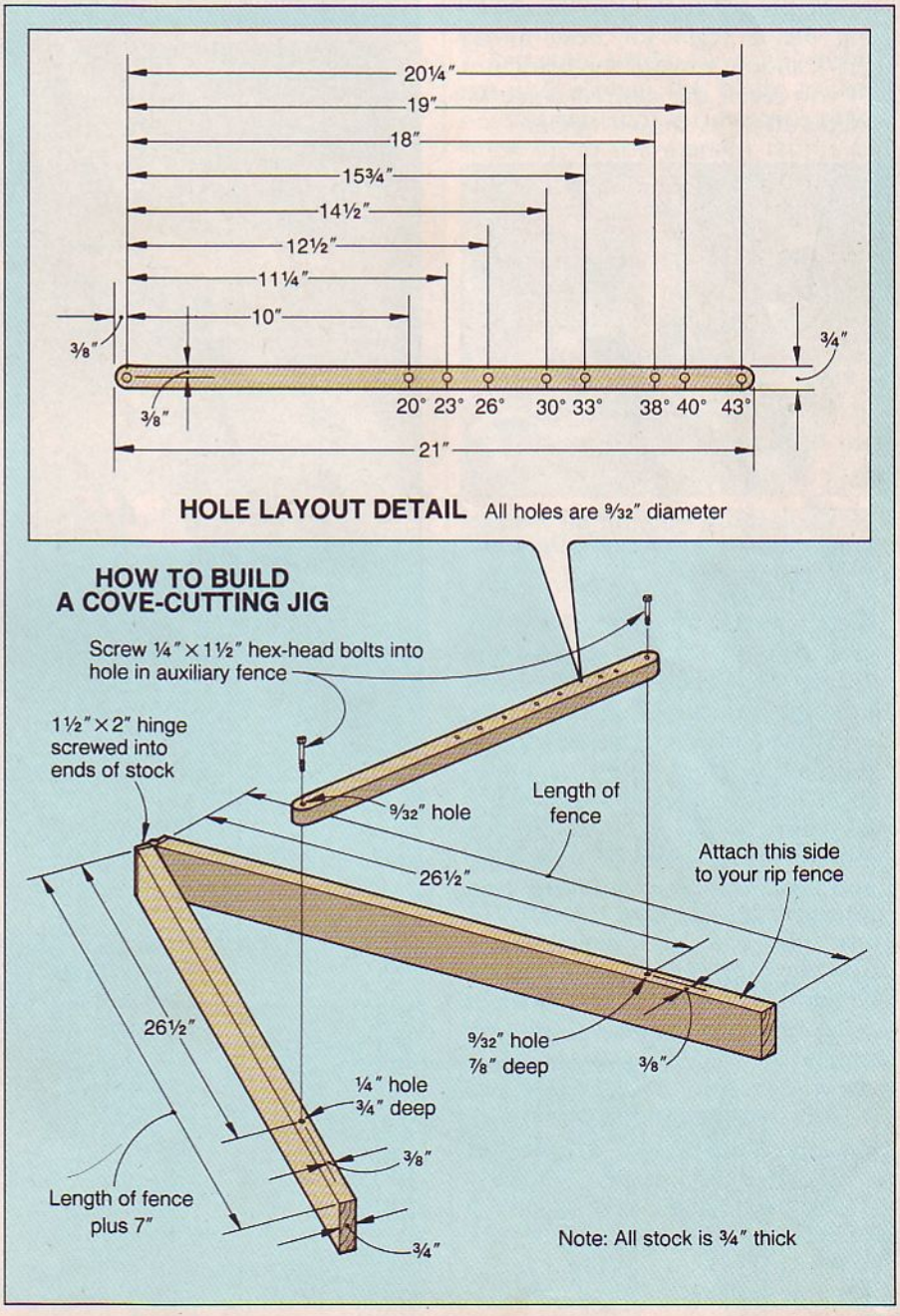
1 Before you get to the fun part, though, you need to build the simple cove-cutting jig shown at *right.* This will enable you to guide the workpiece at an angle over the blade. After completing the jig, attach it to your rip fence.

2 After choosing a cove radius, check the chart on the following page for the depth of the cove. Raise your tablesaw's blade for the prescribed depth of cut, and mark a centerline onto the tabletop directly over the saw arbor as shown *below.* Replace the saw's insert, lower the blade below the table, and extend the mark across the width of the insert.

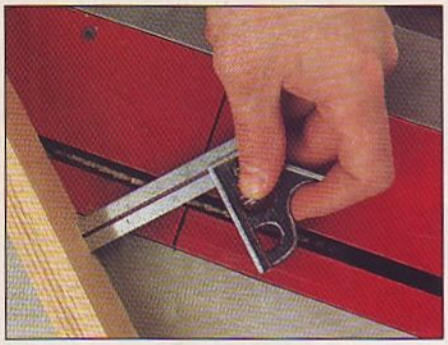


With your blade set for the height of the final coving cut, mark the arbor's center on your tablesaw top.

Continued



3 Check the chart for the necessary fence angle and fence-to-blade offset. After adjusting the jig to the proper angle (see the drawing *below right* for how to do this), slide it toward the blade until you reach the desired fence-to-blade offset as shown *below.*

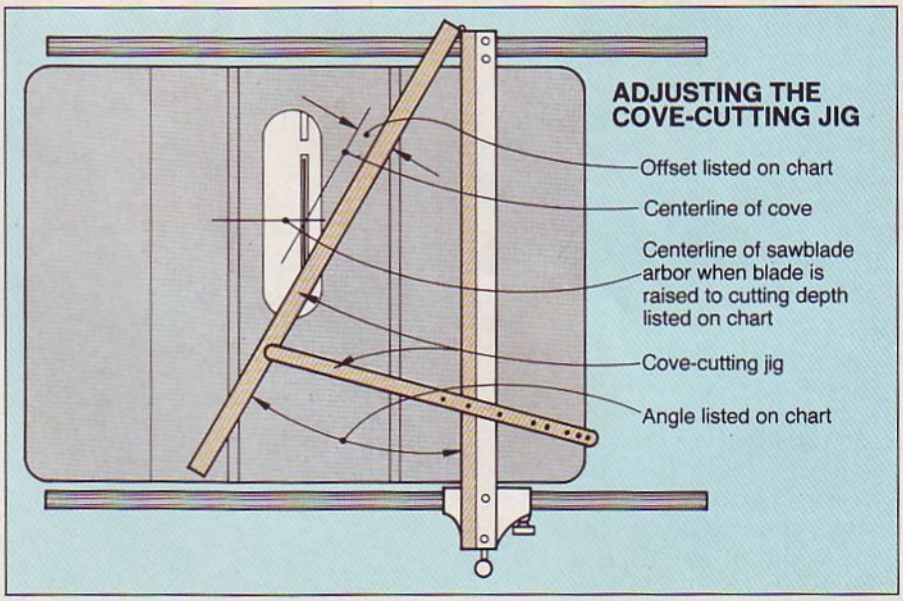


Set the auxiliary fence for the fence-to-blade offset by measuring perpendicularly from the fence.

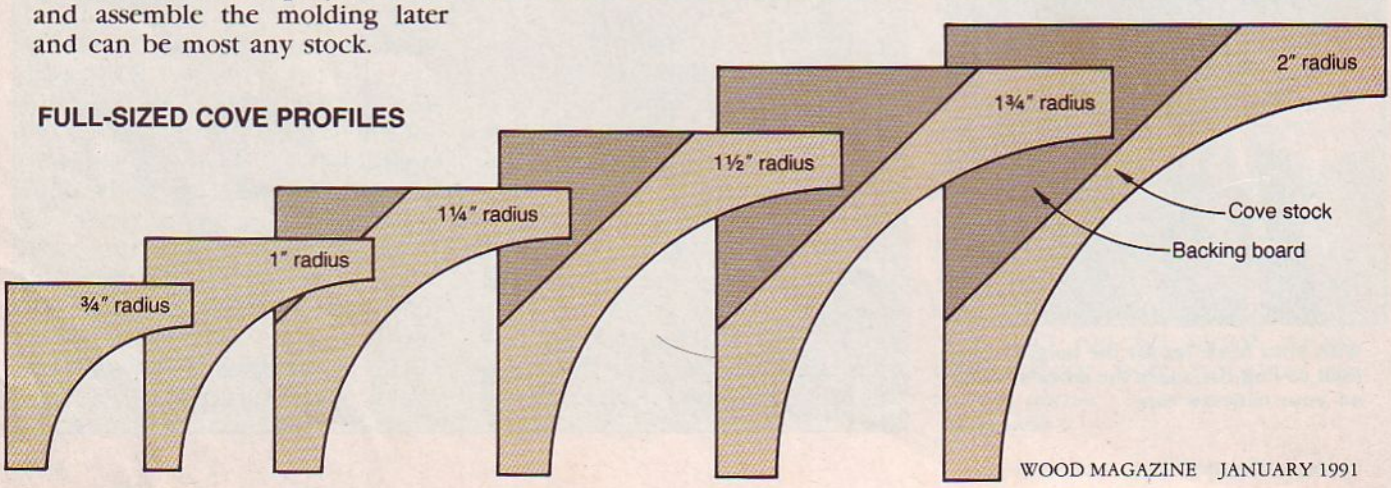
4 Now, refer again to the chart, and cut your stock to size. Be sure to cut the stock several inches long to allow for miter-cutting later. As you can see by looking at the cove profiles *below,* some require a backing board. This backing must be glued on before you cut the cove. It helps you miter and assemble the molding later and can be most any stock.

HANDY GUIDE TO CUTTING COVES WITH A TABLESAW (USING A 10" BLADE)

Cove radius	Width of cut	Depth	Fence-to-blade offset	Fence angle	Cove stock thickness × width (inches)	Backing board thickness × width (inches)
¾"	1 1/16"	7/32"	¾"	20°	¾ × 1⅝	Not Needed
1"	1 13/32"	5/16"	1"	23°	1 1/16 (5/4 stock) × 1¾	Not Needed
1¼"	1¾"	⅜"	1 1/16"	26°	¾ × 2⅛	½ × 2⅛
1½"	2 3/32"	7/16"	1¼"	30°	¾ × 2½	¾ × 2½
1¾"	2 15/32"	½"	1½"	33°	¾ × 3	1 × 3
2"	2 27/32"	9/16"	1⅝"	38°	¾ × 3¼	1⅛ × 3¼


ADJUSTING THE COVE-CUTTING JIG
Offset listed on chart
Centerline of cove
Centerline of sawblade arbor when blade is raised to cutting depth listed on chart
Cove-cutting jig
Angle listed on chart

FULL-SIZED COVE PROFILES

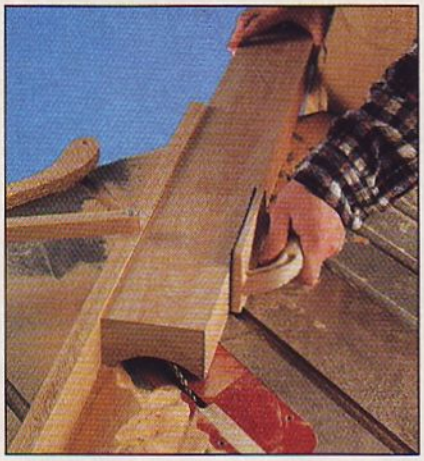


Editor's note: *Before taking the next step, make some cuts in scrap stock to test your results.*

5 Raise the blade ⅛" above the saw table, and pass the workpiece over the blade as shown *below.* Continue to raise the blade and take light cuts until you achieve the full depth of the cove. You can use any 10" blade, but we made our smoothest cuts with an 80-tooth, carbide-tipped blade, taking no more than ⅛" of stock with each pass.

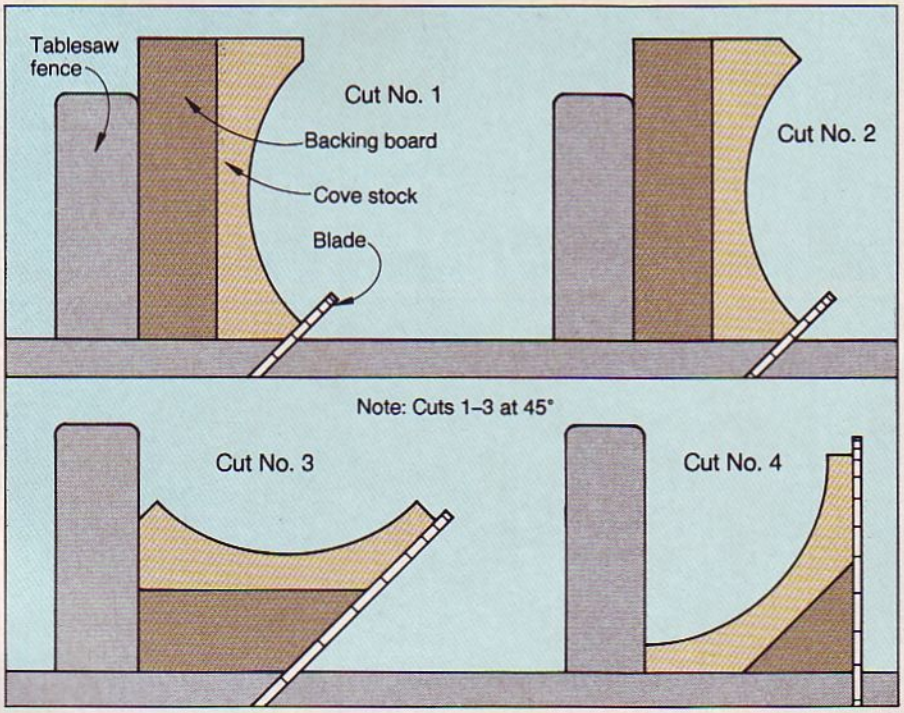
6 To sand the blade marks from the workpiece, make a custom sanding block by cutting off a slice of the cove profile, and transferring the cove shape to a block as shown in the inset photo *below.* Then, bandsaw the block to shape. As a sanding guide, draw pencil lines across the cove and sand the profile with 60-grit abrasive until the pencil lines disappear as we're doing *below.*

7 Now, cut the workpiece to its final shape by making 45° rips in the sequence shown *below.*

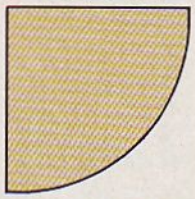


Masking tape, *foreground,* covers the unused opening in the tablesaw insert to reduce the flying sawdust.

As you sand the cove molding, be careful to remove only the saw marks. Smooth with 100- and 150-grit papers.



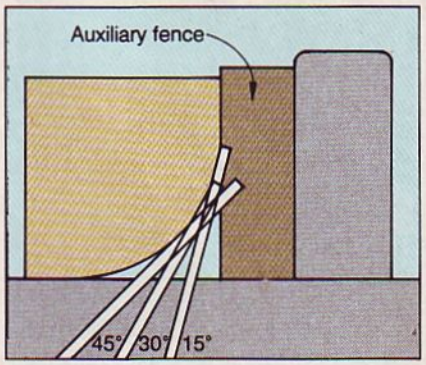
5 EASY STEPS TO A ROUND-OVER



Equipped with the right bit, you can safely rout round-overs up to a ¾" radius. But, if you don't have such a bit, or want to cut larger round-overs, then try this procedure:

1 First, attach an auxiliary fence of ¾"-or-thicker stock to your rip fence. Now, mark the desired radius on the end of the stock.

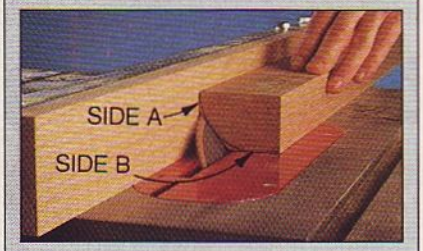
2 Set your blade for a 45°-bevel cut and elevate the blade to the necessary height for removing the stock up to the marked radius as shown *below.* Set the workpiece aside, turn on the saw, and carefully slide your fence over until the blade cuts about ⅛" into the auxiliary fence. Turn off the saw and align the fence and workpiece so the blade cuts just outside the marked radius. When you're satisfied that the cut will fall exactly on the outside of the line, make your cut.



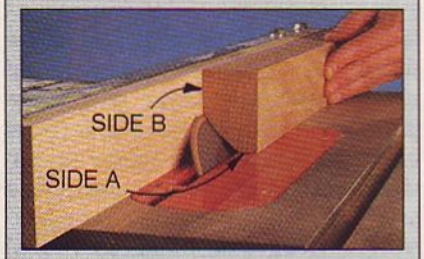
3 Slide the fence to the side, set your blade at 40°, and align the fence and workpiece for a cut that removes stock up to the marked line. As shown on the next page, make a cut with Side A against the fence. Then, flip the workpiece end-for-end, place Side B against the fence, and make another cut.

4 Repeat Step 3 with the blade at 35°, 30°, 25°, 20°, 15°, 10°, and 5°.

Continued

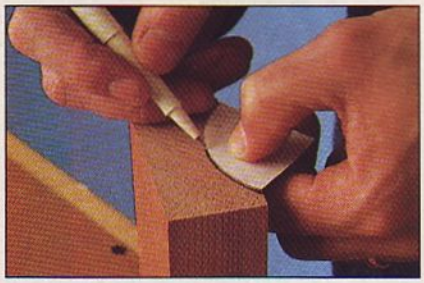


After completing a 45° bevel cut, make your first 40° cut with Side A against the fence.



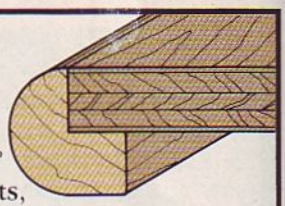
For the second 40° cut, flip the workpiece end for end and place Side B against the fence.

5 Now, make a sanding block for smoothing out the facets. Start by marking the same radius on a 6"-long block of wood as shown *below*. After bandsawing along the marked line, apply 60-grit adhesive-backed sandpaper to the block and sand the facets.



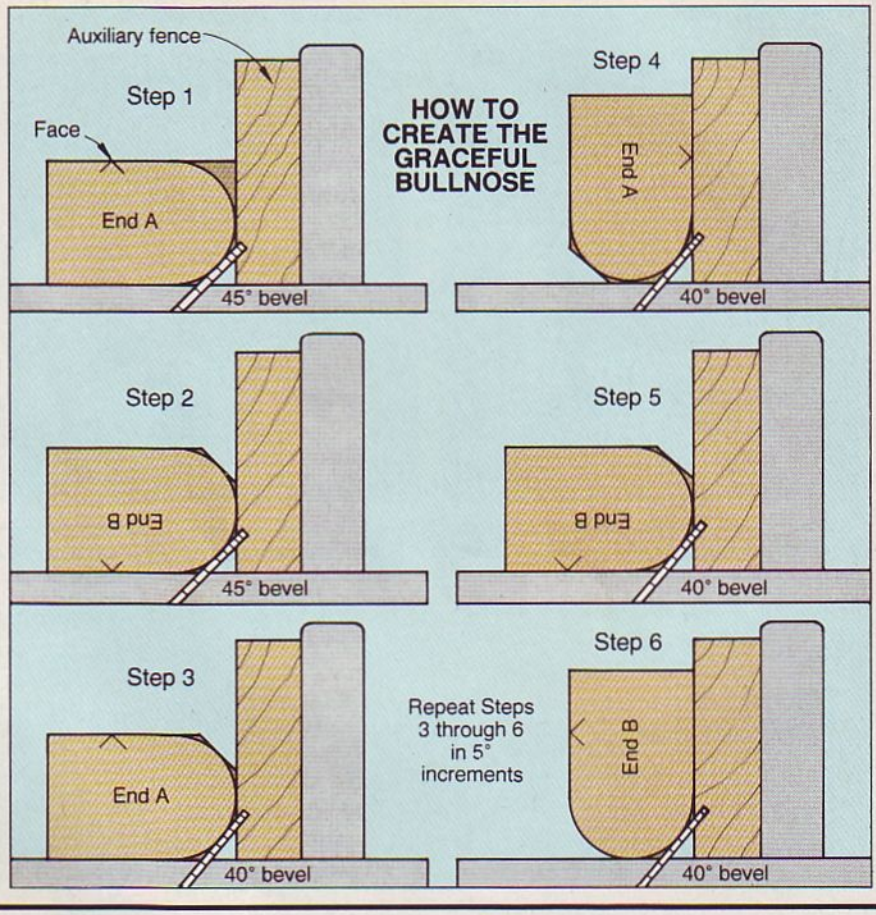
Transfer the radius of your round-over to a sanding block, then bandsaw the block to shape.

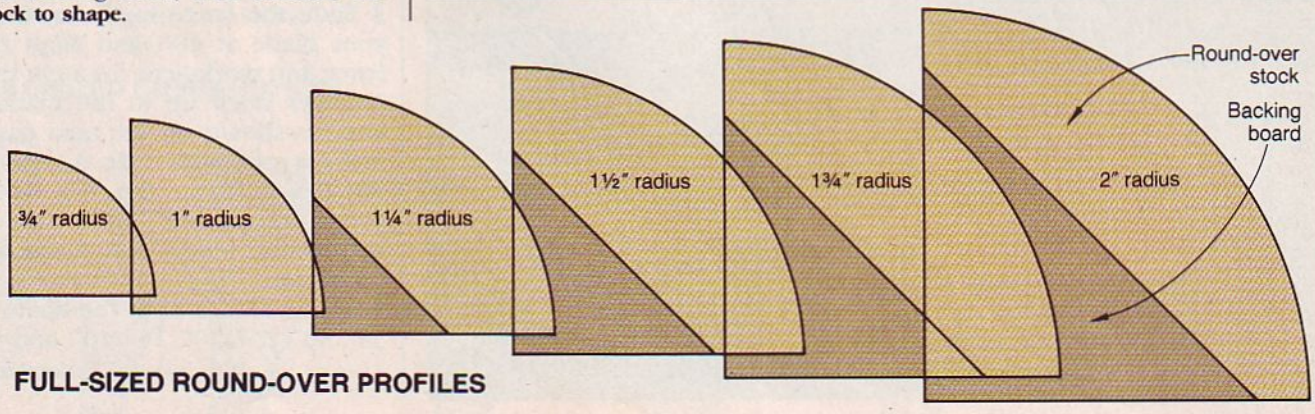
6 QUICK STEPS TO A BULLNOSE



By taking the round-over procedure a few steps further, you can make a bullnose profile such as the one shown *above*. These large bullnoses also make an attractive edge on counters and tabletops.

Just mark the radius on the end of a workpiece and follow the 6-step procedure *below*. After making the 45° and 40° cuts, repeat Steps 3–6 with the blade at 35°, 30°, 25°, 20°, 15°, 10°, and 5°. Then, transfer the radius to a sanding block and bandsaw it to shape as described in Step 5 at *left*. Smooth the facets with 60-, 100-, and 150-grit abrasives.





FULL-SIZED ROUND-OVER PROFILES

ADD STATELY ELEGANCE WITH THE DENTIL PROFILE

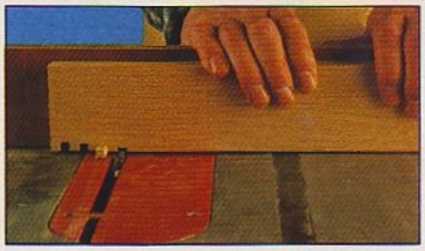
As you can see by looking at the molding on pages 38 and 39, these projections help create a stately, architectural quality. Dentils work best when combined with a large cove molding.

Typically, a dentil has square teeth separated by a distance equal to the width of each tooth as shown by dimension X in the drawings at *right* and *below*. For furniture, X normally equals ⅜" to ¾", Y is equal to or less than X, and dimension Z should be about one-third of X. Here's an easy way to make a dentil:

1 First, you'll need to construct a basic indexing jig similar to the one shown *below*. After attaching an auxiliary fence of ¾" plywood to your miter gauge, mount a dado blade in your tablesaw that's set to equal the width of one tooth (X). You'll get the best results with a sharp, stackable dado set that cuts a flat notch.

For this example, let's say X equals ⅜". In this case, you should cut a ⅜" notch (marked Notch A in the drawing *below*), ⅜" high through the miter-gauge auxiliary fence. Now, remove the fence and cut Notch B with exactly ⅜" between the two notches. Then, machine a piece of stock that's ⅜×⅜×1½" and glue this indexing pin into Notch A so it protrudes ¾" out from the face of the fence.

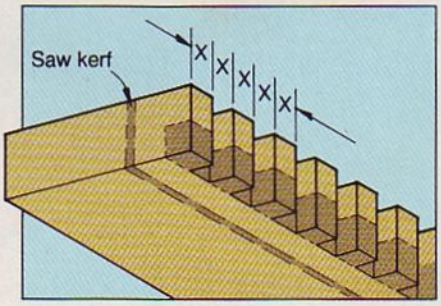
2 To cut the dentils, butt one squared end of your workpiece against the left side of the indexing pin and cut a notch into the workpiece. Place this notch over the indexing pin and make another cut. Repeat this process along the length of the workpiece as shown *below*.

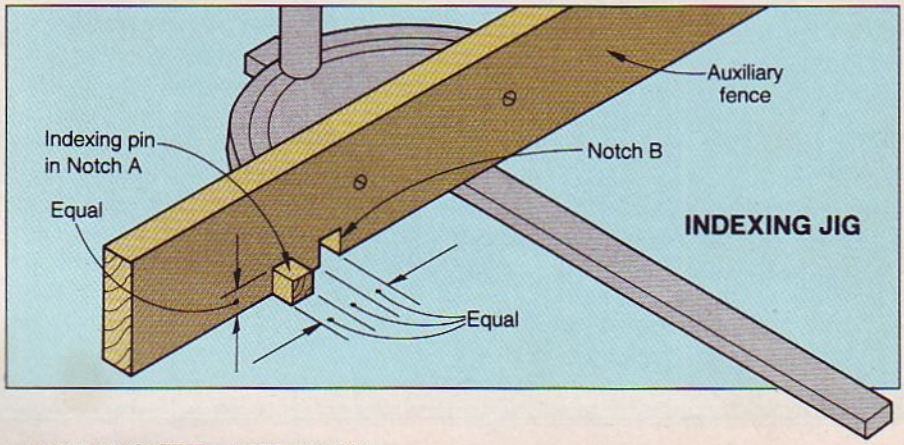


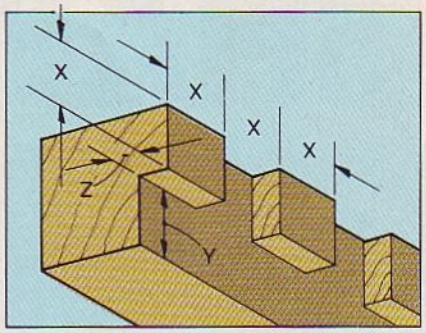
Firmly hold your workpiece against the auxiliary miter-gauge fence as you cut the dentil notches.

3 Next, cut a rabbet into the workpiece as shown by the shaded area on the drawing *below*. Then, cut the dentil to its finished width as shown by the saw kerf.

4 Before you miter your dentil stock, plan each cut so you have a nearly complete notch or tooth at each corner. When the dentil stock meets at a mitered corner, notches should meet notches or teeth should meet teeth.







Some tips for completing your large-scale molding

- Miter the individual moldings as you attach one layer at a time to your project. This way, you have better control over your miter cuts and can minimize any gaps between the pieces. Don't try to assemble the entire molding, then miter it and attach it to the project.

As you attach the layers, work from the bottom or top of the molding—the size of the molding and the project will dictate the most convenient procedure. For the gun case on page 44, we turned the cabinet upside down and started with the large cove moldings.

- As you glue together each layer, minimize nailing by clamping the pieces in place. (Don't forget to first dry-clamp the pieces in place to check for fit.) If you must use brads to adequately secure the piece, don't forget to predrill pilot holes. For a drill bit that's just the right size, just chuck one of the brads into your drill.
- Take your time to make sure the miters match closely. And, clean up any mismatched miters as you go rather than waiting until you completely assemble the molding to do any sanding or putty work.

Written by Bill Krier with
Jim Boelling and Jim Downing
Illustrations: Kim Downing;
Mike Henry
Photographs: Bob Calmer

A High-Caliber Gun Cabinet

SHARPSHOOTER'S

Every couple of weeks, we hear from a reader who's on the hunt for a gun cabinet. Not long ago, we decided to design one for all of you outdoor enthusiasts.

This handsome wall-hung unit features a lighted, lockable gun compartment with a ¼" safety-glass door. We've included locking pins that secure the three drawers, which can store gun-cleaning supplies and game calls.

For those of you who don't hunt or shoot, but like the looks of this unit, think about installing a shelf or two in the compartment and displaying other valued collectibles in this case.

Note: For details on building the decorative moldings gracing the top and bottom of our wall-hung gun cabinet, refer to the techniques article starting on page 38.

Start with the basic cabinet

From ¾" oak plywood, cut the cabinet end panels (A), shelves (B), and dividers (C) to the sizes listed in the Bill of Materials on page 47. Note the grain direction shown on the Cutting Diagram before cutting the pieces.

SHOWCASE

2 Cut or rout the ¾" dadoes and ¾" rabbets in the end panels and the bottom two shelves where shown on the Basic Cabinet drawing. (After marking the dado and rabbet locations, we placed masking tape along the marked cut lines. The tape supports the thin veneer and greatly reduces splintering when cutting.)

3 Cut a ⅜" dado ⅜" deep in each end panel where shown on the Dado detail.

4 For the door locks, bore a ¾" hole through each end panel, drilling from the outside in and backing the stock with scrap to prevent chipout. Now, mark the centerpoints on the middle shelf (B) and drill ⅜" holes for the drawer lock pins.

5 If you wish to add the can lights (see the Buying Guide for our source), mark the centerpoints and draw a pair of 3¼"-diameter circles on the top shelf where shown on the drawing. Drill a blade start hole, and cut the holes to size with a jigsaw.

6 Dry-clamp the pieces (A, B, C), with the front and back edges flush. Check for square and tight-fitting joints. Trim if necessary. Now, glue and clamp the assembly. (We placed masking tape next to the joints to catch any glue squeeze-out.)

7 Measure the opening, and cut the cabinet back (D) to size from ¾" plywood. (To highlight the guns, we covered our fir-plywood cabinet back with velour fabric—we used Robe Velour II. If you want the wood grain to show, use oak plywood.) Mark the centerpoints and drill and countersink the holes for mounting the back to the cabinet.

8 Cut the end panel front trim pieces (E) to size. With the edges and ends flush, glue and clamp them to the front of the end panels (A). To continue the ⅜" dado into the trim pieces (see the Dado detail accompanying the Basic Cabinet drawing for location), mark and drill a ⅜" hole ⅜" deep where shown. Chisel to the hole to form the stopped dado.

9 Cut the top rail (F) and bottom trim pieces (G, H) to size. Glue and clamp them to the cabinet.

Add the lower trim assembly

1 For trim pieces I and J, cut a piece 2×78". Rout the front edge of the long piece to the shape shown on the Section View detail accompanying the Lower Trim Assembly drawing. Miter-cut trim pieces I and J to length.

2 Cut the back strip (K) to size. Glue and nail part J to the bottom of the cabinet where shown on the drawing and detail. Be sure to center it from side to side. Then, add parts I and K.

3 Cut the filler strips (L) and bottom piece (M) to size. Glue the filler strips to the bottom piece flush with the front and back edges. Then, glue and nail the L-M assembly to the bottom of the molding frame (I, J, K). Make sure that the back edge of M is flush with the back edge of the cabinet pieces A and K, and centered from side to side.

4 For trim pieces N and O, cut a piece of ¾" oak to 1¼×78". Using the process described on page 39, form the cove along the front edge with your tablesaw. Miter-cut trim pieces N and O to length. Glue and clamp the front trim piece (N) to the assembly. Next, add the end trim pieces (O).

5 Cut trim pieces P and Q to size plus 2" in length. Using a router table fitted with a fence, rout a ¼" round-over along one edge of each piece. Miter-cut the pieces to length. Glue and clamp P and Q to the assembly. Sand the trim.

The upper trim assembly comes next

1 Cut the filler strips (R, S) to size. Glue and clamp them to the cabinet top where shown on the Upper Trim Assembly drawing and accompanying detail.

2 Cut one piece of ¾"-thick oak to 2×90". Now, cut a ¾"-thick piece of stock (it doesn't show, so pine will do) to the same length and width for the backing board. You'll use both pieces to form the cove molding (T, U).

3 Glue and clamp the pieces face to face where shown in drawing on page 48. Using the technique on page 40, form the cove along one surface of the oak. Bevel-rip the edges of the lamination.

4 Miter-cut the top cove molding pieces (T, U) to length. Glue and clamp them to the filler strips (R, S) where shown on the drawing.

5 Cut a piece of ¼" stock (we planed thicker stock to ¼" thick) to ⅞×80" for trim parts V and W. Using a table-mounted router fitted with a fence and a ⅛" round-over bit, rout ⅛" round-overs along both front edges of the entire length. Miter-cut the pieces to length and glue them in place.

6 Cut a piece of ¾"-thick oak to ¾×80" for parts X and Y. Viewing the Dentil Mold detail for reference and the process on page 47 for details, form the dentil mold on the long strip. Carefully measure the front piece to ensure the dentil patterns at each mitered end will be identical. Miter-cut the dentil mold pieces (X, Y) to length. Glue the dentil mold pieces to the cabinet.

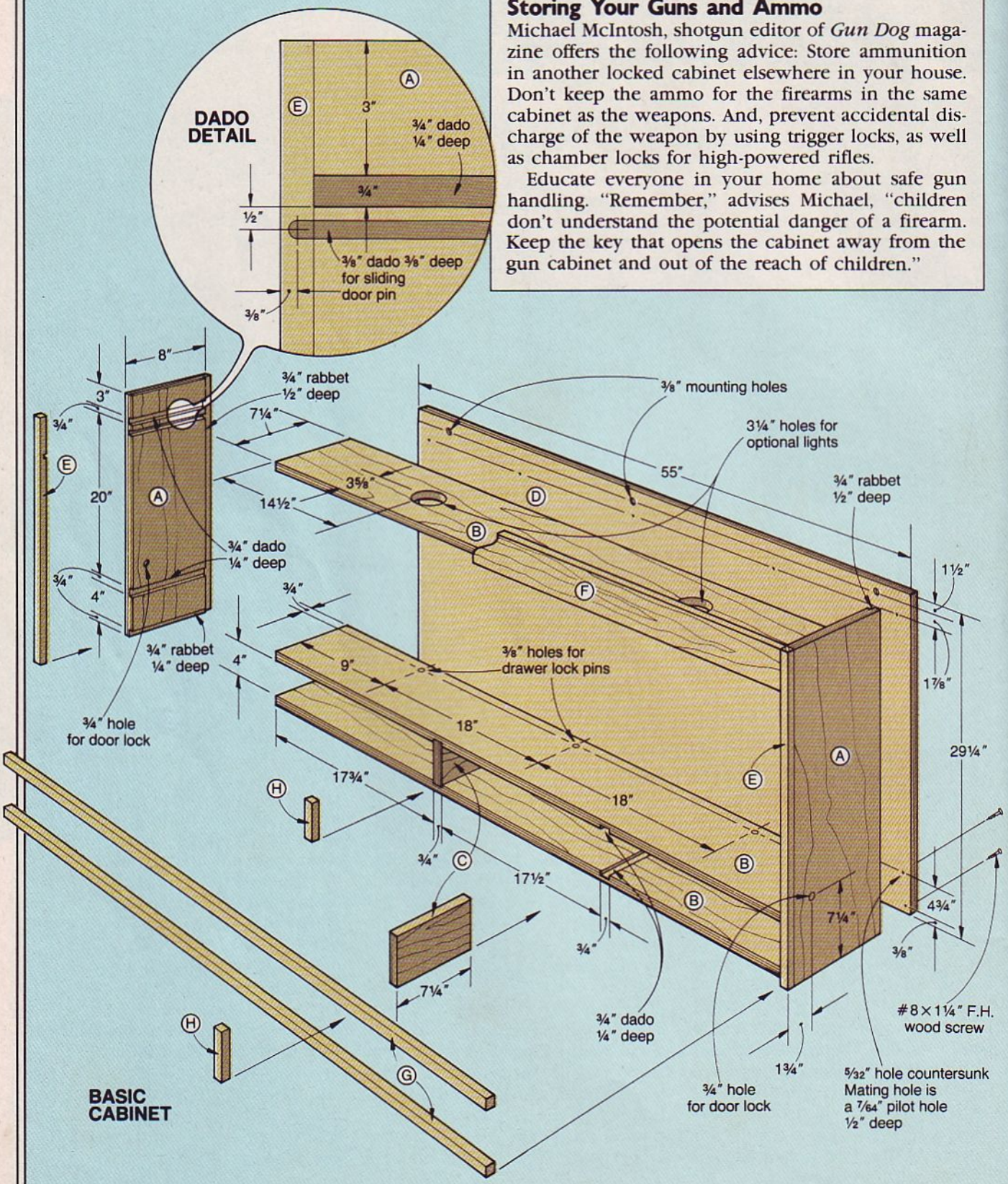
Continued

SHARPSHOOTER'S SHOWCASE

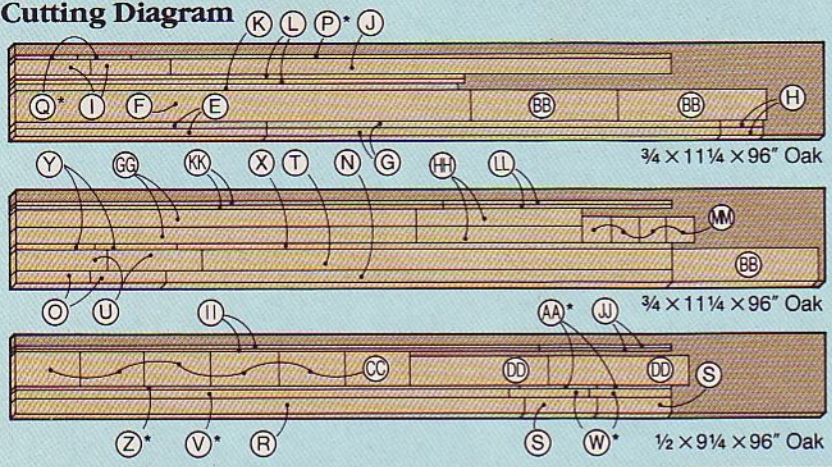
Storing Your Guns and Ammo

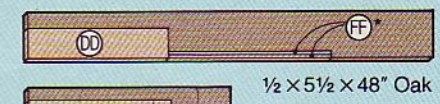
Michael McIntosh, shotgun editor of *Gun Dog* magazine offers the following advice: Store ammunition in another locked cabinet elsewhere in your house. Don't keep the ammo for the firearms in the same cabinet as the weapons. And, prevent accidental discharge of the weapon by using trigger locks, as well as chamber locks for high-powered rifles.

Educate everyone in your home about safe gun handling. "Remember," advises Michael, "children don't understand the potential danger of a firearm. Keep the key that opens the cabinet away from the gun cabinet and out of the reach of children."

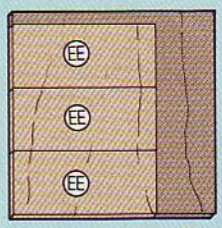


Cutting Diagram



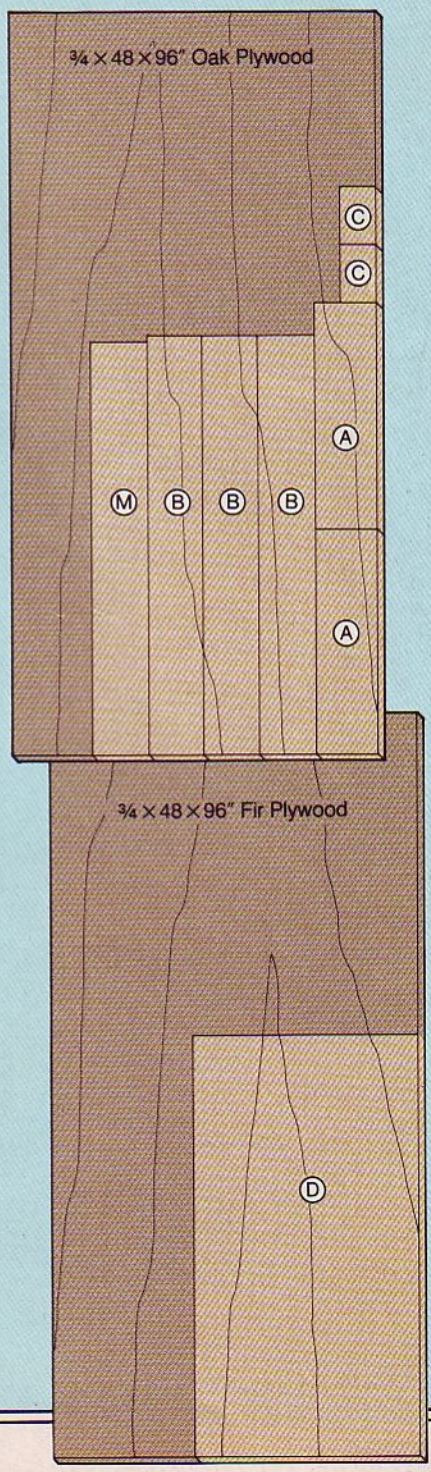


½ × 5½ × 48" Oak



¼ × 24 × 24" Oak Plywood

*Plane or resaw parts marked with an * to the thickness stated in the Bill of Materials



Bill of Materials

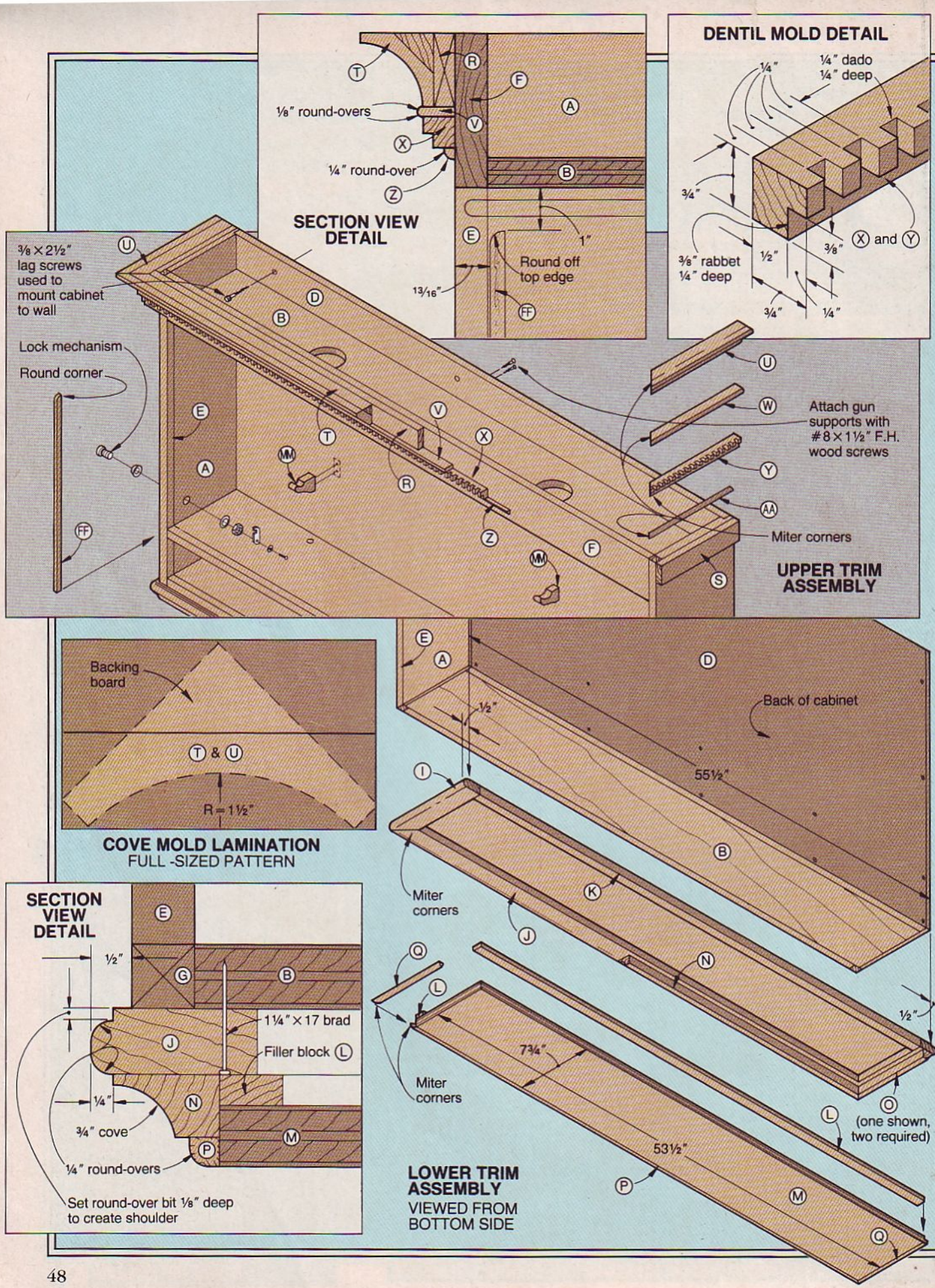
Parts		Finished Size* T	W	L	Matl.	Qty.
BASIC CABINET						
A	ends	¾"	8"	29¼"	OP	2
B	shelves	¾"	7¼"	54½"	OP	3
C	dividers	¾"	4½"	7¼"	OP	2
D	back	¾"	29¼"	55"	P	1
E	trim	¾"	¾"	29¼"	O	2
F	rail	¾"	3¾"	54"	O	1
G	trim	¾"	¾"	54"	O	2
H	trim	¾"	¾"	4"	O	2
LOWER TRIM ASSEMBLY						
I*	trim	¾"	2"	9¼"	O	2
J*	trim	¾"	2"	56½"	O	1
K	strip	¾"	¾"	52½"	O	1
L	filler strips	⅜"	¾"	53½"	O	2
M	bottom	¾"	7¾"	53½"	OP	1
N*	cove mold	¾"	1¼"	56"	O	1
O*	cove mold	¾"	1¼"	9"	O	2
P*	trim	⅜"	⅜"	54¼"	O	1
Q*	trim	⅜"	⅜"	8⅛"	O	2
UPPER TRIM ASSEMBLY						
R	filler strip	½"	1¾"	56½"	O	1
S	filler strips	½"	1¾"	8¾"	O	2
T*	cove mold	1½"	2½"	60"	LO	1

Parts		Finished Size* T	W	L	Matl.	Qty.
UPPER TRIM ASSEMBLY						
U*	cove mold	1½"	2½"	11"	LO	2
V*	trim	¼"	⅞"	57¼"	O	1
W*	trim	¼"	⅞"	9⅝"	O	2
X*	dentil mold	¾"	¾"	57"	O	1
Y*	dentil mold	¾"	¾"	9½"	O	2
Z*	trim	¼"	¼"	56"	O	1
AA*	trim	¼"	¼"	9"	O	2
DRAWERS						
BB	fronts	¾"	3 15/16"	17 7/16"	O	3
CC	sides	½"	3 15/16"	7⅝"	O	6
DD	backs	½"	3 7/16"	16 15/16"	O	3
EE	bottoms	¼"	7⅝"	16 15/16"	OP	3
DOOR						
FF	stops	¼"	⅜"	19"	O	2
GG	rails	¾"	2"	49⅞"	O	2
HH	stiles	¾"	2"	19¾"	O	2
II*	trim	¼"	½"	49⅞"	O	2
JJ*	trim	¼"	½"	15¾"	O	2
KK*	stops	5/16"	¾"	50⅞"	O	2
LL*	stops	5/16"	¾"	16¾"	O	2
GUN SUPPORTS						
MM	supports	¾"	3"	31¼"	O	4

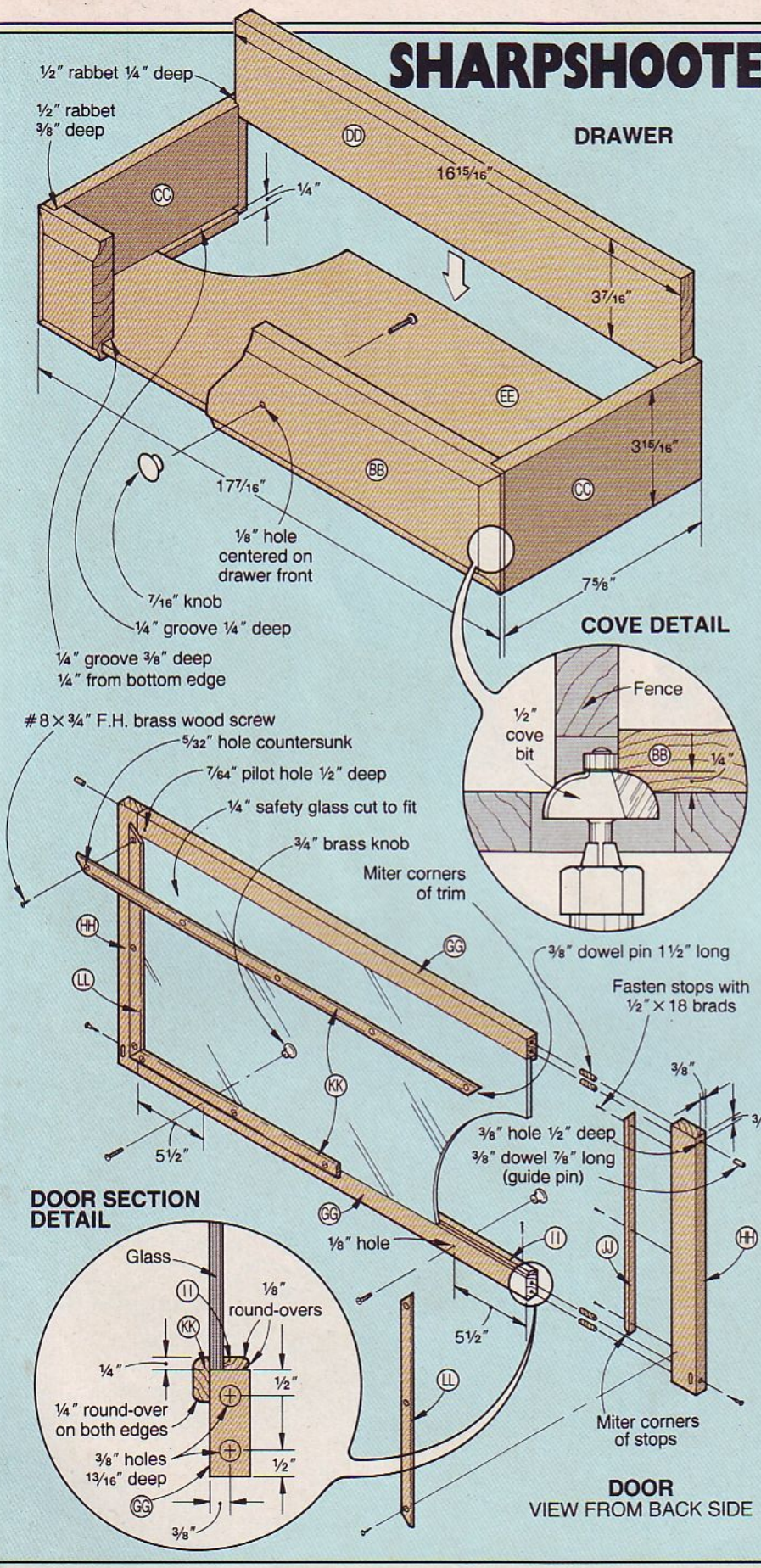
*Initially cut parts marked with an * oversized. Then, trim each to finished size according to the how-to instructions.

Material Key: OP-oak plywood, P-plywood, O-oak, LO-laminated oak

Supplies: masking tape, #8 × 1¼" flathead wood screws, 1¼" × 17 brad, ½" × 18 brads, #8 × ¾" flathead brass wood screws, ⅜" dowel pins 1½" long, ⅜" dowel stock for drawer locks, #6 × 1¼" flathead brass wood screws, ¼" safety glass for door, ⅜" × 2½" lag screws, ⅜" washers, #8 brass finish washers, carpet tape, 29¼ × 55" velour fabric, carpet tape, stain, finish.


SECTION VIEW DETAIL
⅛" round-overs
¼" round-over
1"
Round off top edge
13/16"
DENTIL MOLD DETAIL
¼" dado ¼" deep
¾"
⅜" rabbet ¼" deep
½"
⅜"
X and Y
¼"
¾"
⅜ × 2½" lag screws used to mount cabinet to wall
Lock mechanism
Round corner
Attach gun supports with #8 × 1½" F.H. wood screws
Miter corners
UPPER TRIM ASSEMBLY
Backing board
T & U
R = 1½"
COVE MOLD LAMINATION
FULL-SIZED PATTERN
Back of cabinet
½"
55½"
Miter corners
SECTION VIEW DETAIL
½"
1¼" × 17 brad
Filler block L
¼"
¾" cove
¼" round-overs
Set round-over bit ⅛" deep to create shoulder
7¾"
Miter corners
½"
L (one shown, two required)
53½"
LOWER TRIM ASSEMBLY
VIEWED FROM BOTTOM SIDE

SHARPSHOOTER'S SHOWCASE



7 Cut a piece of ¾" oak to 1½ × 78". Rout a ¼" round-over along one edge of the strip. Now, make two ripping cuts to trim the quarter-round molding parts Z and AA from the oak board. Miter-cut the pieces to length and glue and clamp them to the cabinet. Sand the trim smooth.

Here's how to build the three drawers

1 Cut the drawer fronts (BB), sides (CC), backs (DD), and bottoms (EE) to the sizes listed in the Bill of Materials.

2 Cut the rabbets and grooves in the drawer sides and front where shown on the Drawer drawing.

3 Mark diagonals on the front face of each drawer front to find center. Drill a ⅛" hole in each drawer front for the knob screw.

4 Dry-clamp each drawer to check the fit of the joints and the fit of the drawers in the openings. Trim if necessary. Next, rout a cove around the front edge of each drawer front where shown on the Cove detail accompanying the Drawer drawing.

5 Glue and clamp the drawer parts, checking for square.

Now, add the door

1 Cut the door stops (FF) to size. Cut or sand a ⅜" radius on the top front corner of each (see the Upper Trim Assembly drawing for reference). Glue and clamp the stops to the cabinet sides where shown on the Section View detail of the drawing.

2 Cut the door rails (GG) and stiles (HH) to size. So that the glass will fit well, use your straightest stock for these parts.

3 Mark the dowel-hole center-points on the ends of the rails where shown on the Door Section detail accompanying the Door drawing. Drill ⅜" holes 13/16" deep where marked (we used a doweling jig). Position dowel centers in the holes, and transfer the hole locations to the stiles, and then drill ⅜" holes 13/16" deep.

Continued

SHARPSHOOTER'S SHOWCASE

4 Glue, dowel, and clamp the door, checking for square.

5 Mark the two guide-pin hole centerpoints on the stiles where shown on the drawing. Drill a ⅜" hole ½" deep at each mark. Cut two ⅞"-long pieces of ⅜" dowel, and glue one piece—to function as a guide pin—in each hole.

6 Cut the front trim pieces (II, JJ) to size plus 2" in length. Rout ⅛" round-overs along the front top and bottom edges of each. Miter-cut the pieces to length and sand. Glue and clamp the trim pieces to the front of the door where shown on the Door Section detail.

7 Cut the glass stops (KK, LL) to size plus 2" in length. Rout ¼" round-overs along the edges of each where shown on the Door Section detail. Drill and countersink 5⁄32" holes through the stops where shown on the Door drawing. Sand the stops. Set the glass stops aside; you'll fasten them to the door after you install the glass.

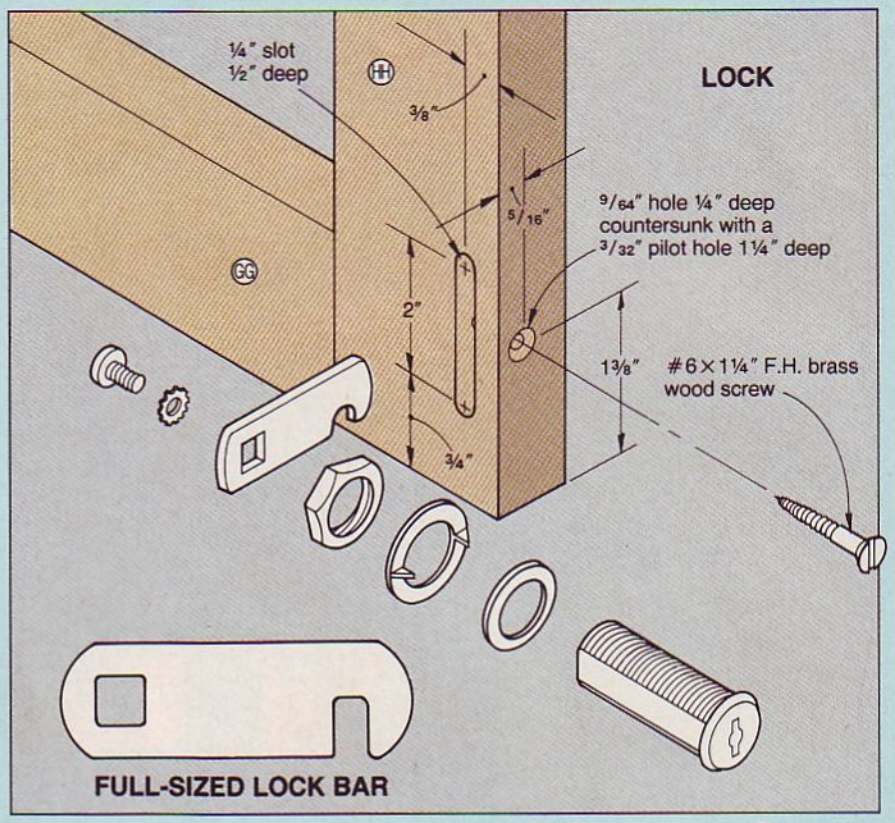
8 To form the ¼" slots in the door stiles for the lock bar (see the drawing at *right* for reference), mark a centerline and drill a series of ¼" holes ½" deep for each slot. With a chisel, trim the waste between the holes to finish forming the slots. Now, drill and countersink a 9⁄16" hole ¼" deep where shown on the drawing. Then, drive a #6 wood screw into the hole. (The screw serves as latch for the lock.)

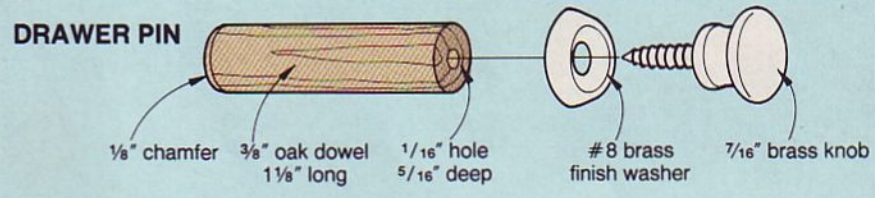
9 Cut or file a notch in the lock bar to the shape shown on the Lock drawing. The notch should fit over the screw installed in the previous step.

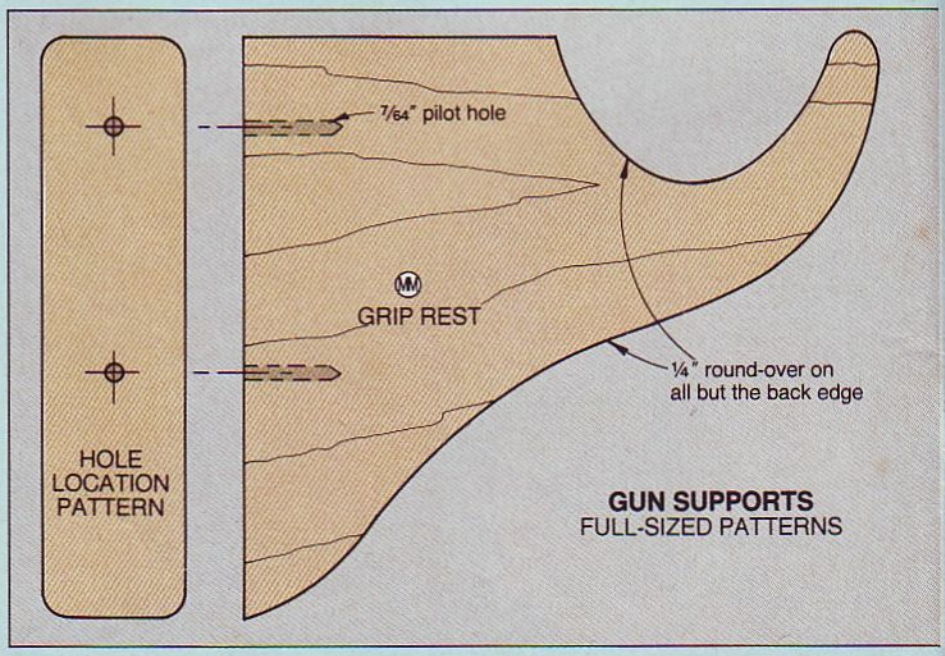
You're almost done—keep up the good work

1 Cut three pieces of ⅜" dowel stock to 1⅛" long. Drill a 1⁄16" hole 5⁄16" deep centered in the top of each, and sand a ⅛" chamfer on the bottom end where shown on the Drawer Pin drawing.

2 Fasten a 7⁄16" brass knob and a #8 brass finish washer to each drawer pin.







3 With the drawers fully closed, insert a pin in each ⅜" hole in the middle shelf (B). With the door locked and the pins in place, the drawers cannot be pulled open. This prevents someone without a key from gaining access to the drawers' contents.

4 Transfer the gun support patterns (MM) below to posterboard and cut them to shape. Check the fit of the supports against your guns and adjust if necessary. Transfer the shape to ¾" oak. Cut and sand them to shape. Rout ¼" round-overs on all but the back edges of each support.

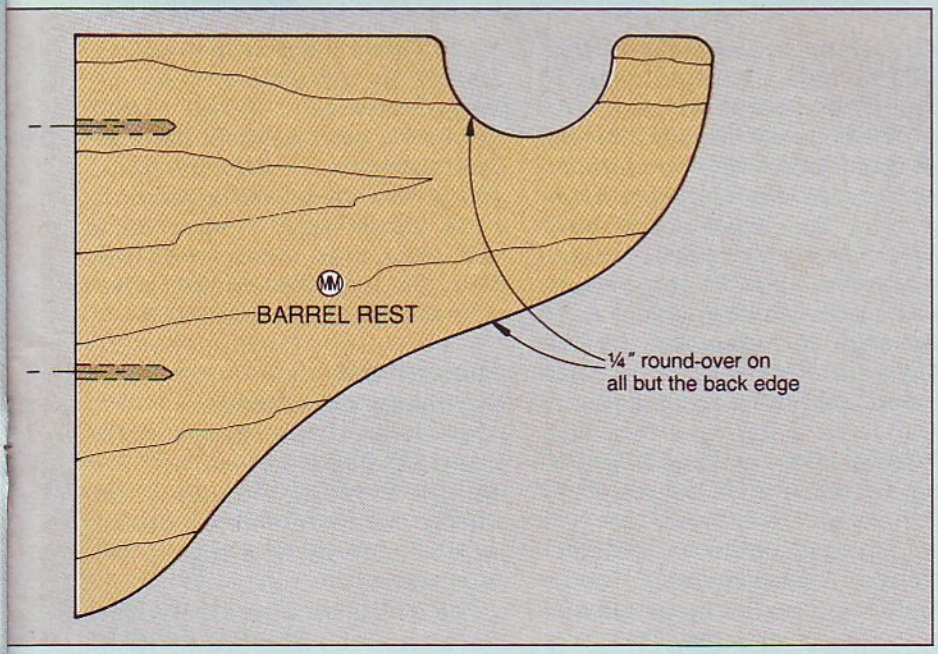
5 To attach the velour fabric to the plywood back (D), adhere strips of carpet tape near each edge on the front face of the fir plywood. Stretch the cloth over the plywood back, and trim off the excess. Temporarily fasten the back to the cabinet with one screw at each corner. Set the cabinet on its back, and determine the location of the gun supports for each firearm. Lightly trace the location on the cloth and remove the back from the cabinet.

6 Sand and stain the cabinet, door, drawers, gun supports, and glass stops. Apply the finish.

7 To embellish your gun-cabinet glass, sandblast the full-sized pattern at *right* to opposite corners of the cabinet and the detail lines along each edge of the glass. Cover the glass with a vinyl resist, and transfer the acorn and line patterns shown at *right* to the resist. Cut the resist with an X-acto knife. Peel off the resist from the areas to be blasted, sandblast the glass, and peel off the remaining resist. The photo at *right* shows what the sandblasted pattern on our glass looked like. (For more information on sandblasting, see pages 34–39 of the April 1990 issue of *WOOD* magazine, or send $2 and a self-addressed business envelope to Sandblasting Techniques, *WOOD* Magazine, P.O. Box 11454, Des Moines, IA 50336-1454.)

8 Install the glass and glass stops (KK, LL). Rub a little paraffin into the door guide-pin slot. Working from the back of the cabinet, slide the door into position (the guide pins protruding from the stiles fit into the ⅜" dadoes).

9 Screw the supports to the cabinet back. With the door in place, replace the cabinet back, and add the knobs, locks, and lights.



FULL-SIZED SANDBLAST PATTERN

Closeup of sandblasted pattern.

10 For mounting the completed gun cabinet to the wall, mark mounting-hole centerpoints 1½" from the top edge of the plywood back (D). Position the centerpoints so they'll center over wall studs. Drill the holes and hang the cabinet. (We used three ⅜×2½" lag screws to securely fasten our gun cabinet to the wall.)

Buying Guide

- **Hardware.** Three 7/16" brass knobs, two brass-plated cam locks, five ¾"-diameter solid brass knobs. Gun cabinet hardware kit, product no. WD191, $31.50 ppd. Constantine, 2050 Eastchester Road, Bronx, NY 10461. Or, call 800-223-8087 to order.

- **Can lights.** 3⅛" body diameter by 2¾" high with a 9' electrical cord. Requires a 40-watt bulb (not included). Catalog no. E3900, $31.40 ppd. per pair. The Woodworkers' Store, 21801 Industrial Blvd., Rogers, MN 55374-9514, or call 612-428-2199.

Produced by Marlen Kemmet
Project Design: James R. Downing; Jim Boelling
Photographs: Hopkins Associates
Illustrations: Kim Downing; Mike Henry

AN EIGHTEENTH-CENTURY CLASSIC THE SHAKER

On a recent vacation, Jim Downing, our design editor, visited the Hancock Shaker Village near Pittsfield, Massachusetts. At the woodshop, craftsman Cliff Myers invited Jim to join him in making a traditional Shaker carrier. After trying the techniques in our own shop, we're inviting you to construct a bit of history for yourself.

Note: You'll need some thin stock for the carrier and handle. You can plane or resaw thicker stock to size, or see our source listed in the Buying Guide at the end of this article.

Construct the band form, pipe support, and two shapers

1 Cut four pieces of ¾"-thick stock to 6×9" (two pieces of 2×8 also would work). Glue and clamp the pieces with the ends and edges flush.

2 Transfer the full-sized band-form pattern from the opposite page to the top piece of stock. Bandsaw the form to shape. Sand the form edges.

3 Mark the start-point reference line on the top surface of the form where shown on the full-sized patterns drawing.

4 Refer to the Pipe Support drawing at *right* to build the support. You'll use this and a pipe clamp later to clinch the tacks that hold the carrier together.

5 Transfer the shaper outline from the full-sized pattern drawing to two pieces of ¾" stock that measure 6×9". Tilt your bandsaw table 10° from horizontal. Bandsaw the two shapers to shape, cutting just *outside* the marked line (the entire line should still be visible when you're done cutting). Drill two 1" holes in each shaper where shown on the drawing titled Shaping the Carrier Band.

The carrier band comes next

1 Cut a piece of 5/64" (.075") thick cherry to 3×27". See the Buying Guide for our source of thin cherry or plane your own to size. (The Shakers also used maple and ash.)

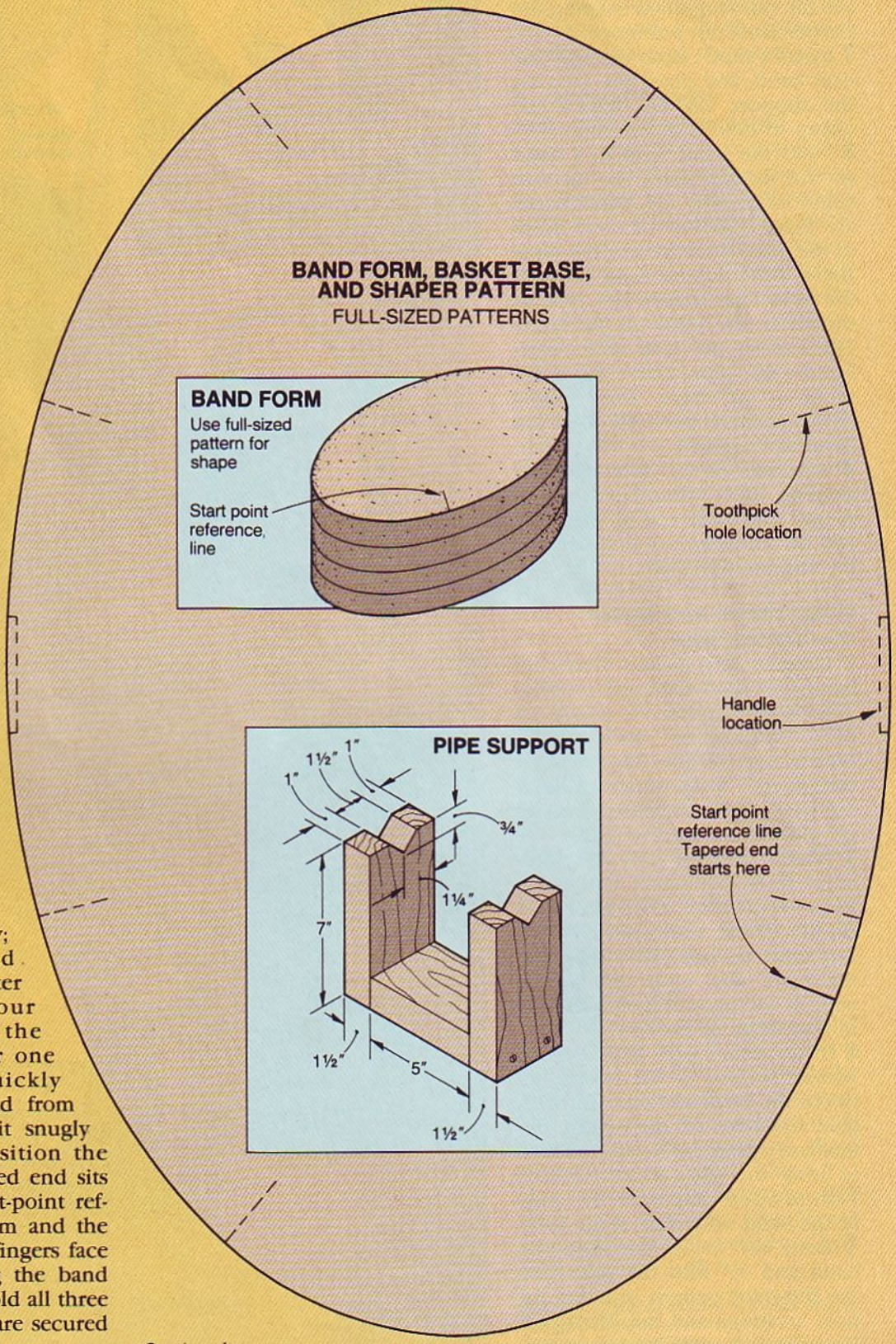
2 Transfer the full-sized finger pattern and hole locations to one end of the band (see the full-sized pattern on page 57 for reference). Drill twelve 1/16" holes through the band where marked.

3 On the end opposite the fingers, sand a 1½"-long taper. See the drawing on page 56 for reference.

4 Bandsaw the fingers to shape. Using a utility or hobby knife and the full-sized band pattern for reference, bevel-cut the edges and ends of each finger. (We followed the Shaker style of beveling the insides of the fingers at about 20° and reducing the bevel to 10° near the end of the fingers.) Now, come back and finish forming the beveled V where the 20° cuts meet. Next, bevel-cut the ends of the fingers.

5 Soak the band in hot water for 25 minutes (we did this in a plas-

OVAL CARRIER



tic wallpaper water tray; a bathtub also would work). Drain the water and immediately pour boiling water over the band and soak it for one minute. Working quickly now, remove the band from the water and wrap it snugly around the form. Position the band so that the tapered end sits directly under the start-point reference line on the form and the beveled edges on the fingers face out. To avoid splitting the band between the fingers, hold all three fingers until the tacks are secured in the following steps.

Continued

OVAL CARRIER

6 Lightly mark a reference line on the top-lapped edges of the band. See the drawing titled Shaping the Carrier Band for reference.

7 Insert a pipe clamp through the oval band, and place the pipe on the support. Lightly tighten the clamp to hold it to the support.

8 Hold the band with one hand so the marked lines on the top edges align and the band edges are flush. Position the 1/16" holes in the band directly over the pipe. Drive #1½ copper tacks through the holes and against the pipe as shown in the photo at *far right*. The end of the tack will clinch against the pipe. Don't drive the tacks at an angle; they won't clinch properly and will cause the band to fit loosely.

9 As shown on the drawing titled Shaping the Carrier Band, slip a shaper into each end of the band and let the band dry and cool on the shapers overnight.

Now, shape and install the carrier base

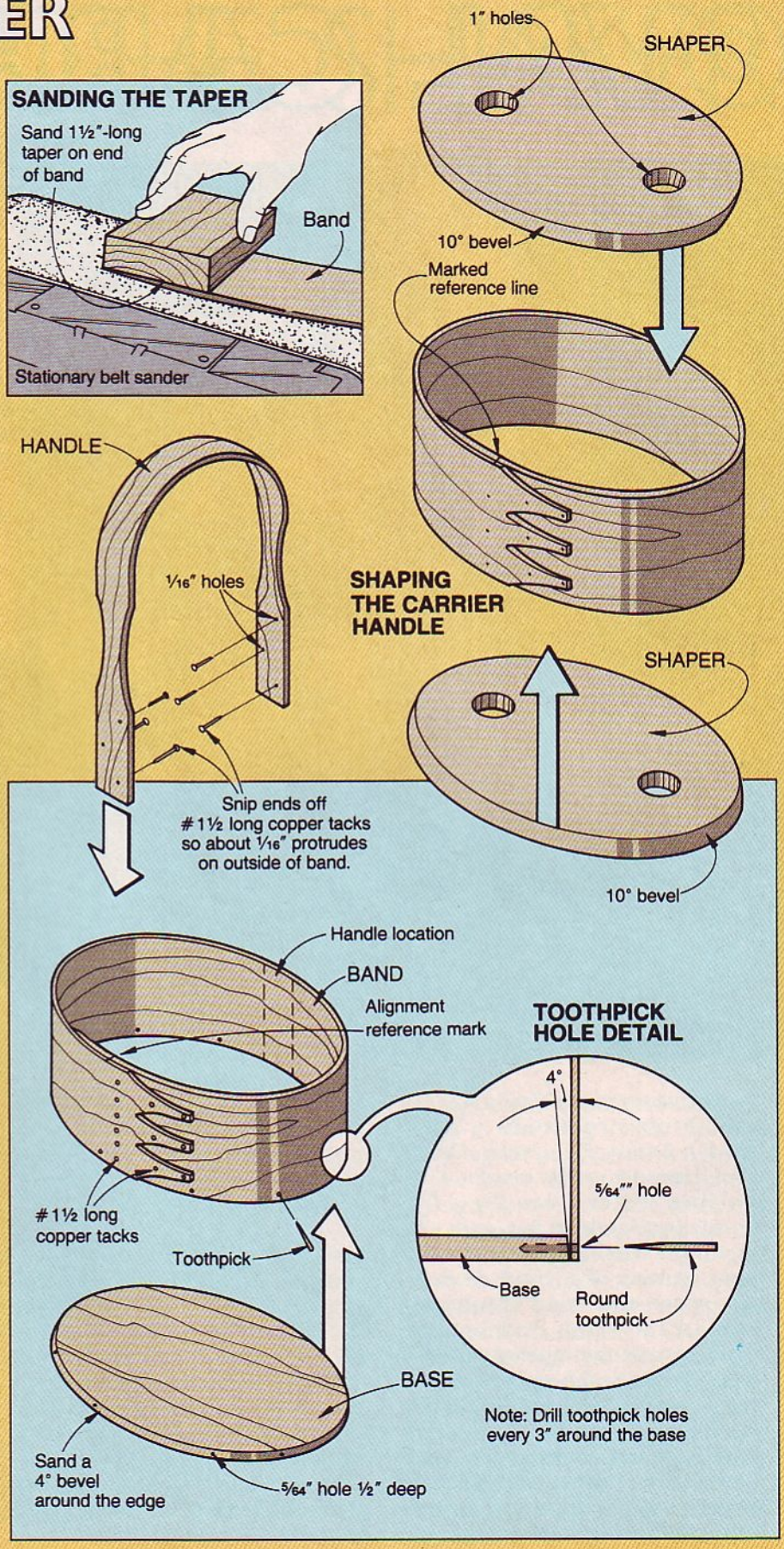
1 Remove the shapers from the band, and sand the band interior.

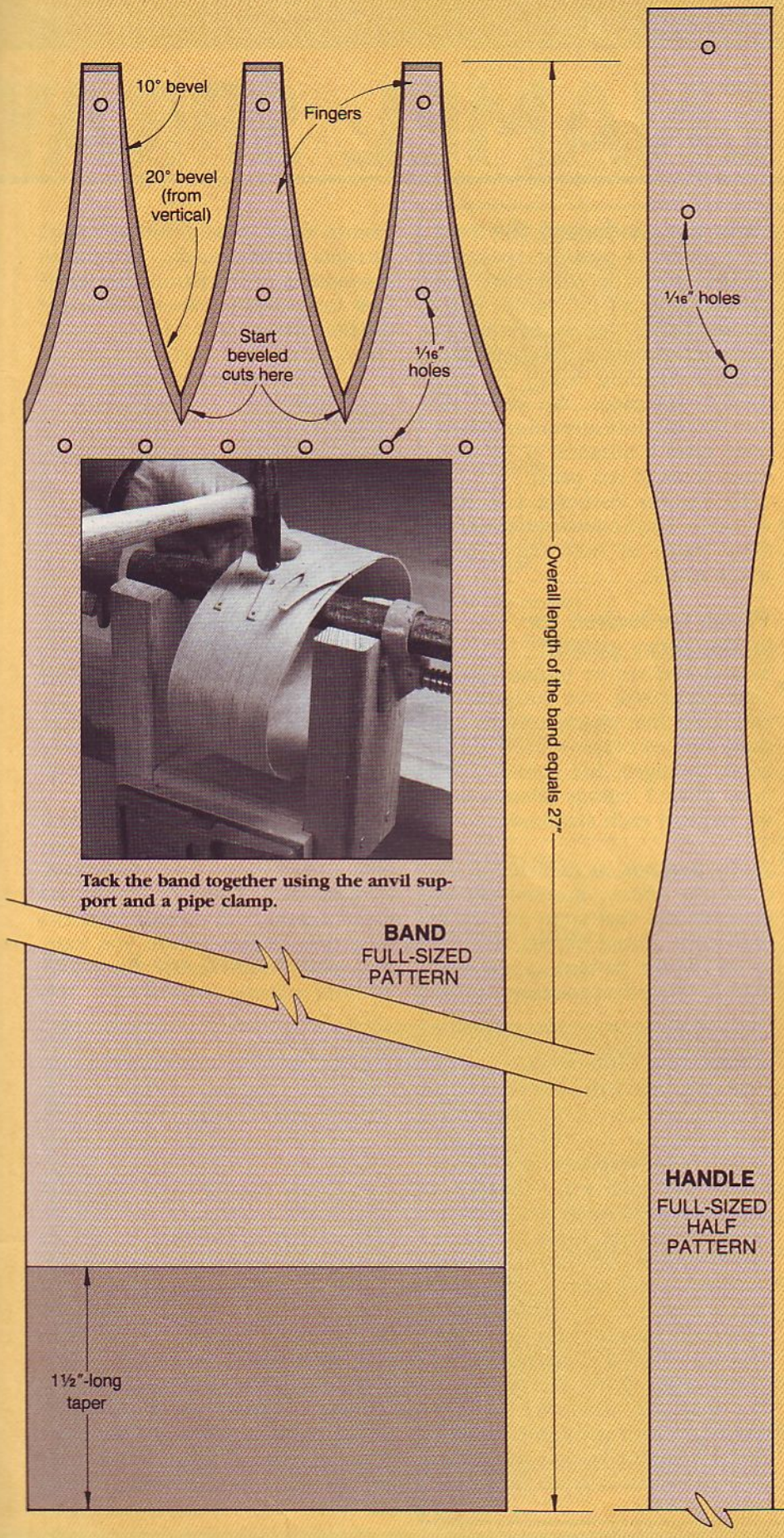
2 Resaw or plane a piece of 6×12" pine to ¼" thick for the carrier base. Transfer the full-sized base pattern to the pine. Bandsaw the base to shape, cutting about 1/8" *outside* the marked line.

3 Tilt the table on your disc sander 4° from horizontal (or, use a belt sander on a conversion stand). Now, bevel-sand to the line until the base fits snugly into the band and until the bottom edge of the band is flush with the bottom edge of the base.

4 If any small gaps exist on the bottom surface of the carrier between the band and base, fill with glue and wipe off the excess. Immediately sand the bottom surface to load the glue-filled crevice with sawdust and flush the edge of the band with that of the base.

5 Drill 5/64" holes through the band and ½" into the base (see the full-sized pattern drawing for hole locations and the Toothpick Hole detail at *right* for reference).





Tack the band together using the anvil support and a pipe clamp.

Tap a round toothpick through the hole in the band and into the base. Trim the end of the toothpick and sand it flush with the outside surface of the band.

A tapered handle adds 'that Shaker look'

1 Cut a piece of ⅛" cherry to ¾" wide by 18½" long for the handle. Transfer the full-sized handle pattern and hole locations to both ends of the handle strip. Bandsaw the four curves to shape. Using the rounded end of a belt sander or a drum sander, lightly sand the bandsawed contours. Drill three 1/16" holes through each end of the handle where marked.

2 Follow the same soaking method used for the band. Remove the band from the water, and immediately center and wrap it over one end of the band form.

3 Position the handle in the basket. Apply a small bead of glue to the mating surfaces of the handle, and then drive 7/16"-long copper tacks from the inside through the handle and band and against the pipe on the support to fasten the handle to the carrier. See the Exploded View drawing for the sizes of tacks to use. For the tacks going through the back of the carrier, drive the tacks through the handle and band, snip ⅛" off the ends, and then drive them against the pipe to clinch the ends.

4 Sand and finish the carrier. The Shakers used milk paints, stains, and clear finishes.

Buying Guide

• **Band stock and tacks.** .075" thick cherry 3×27" (enough for one band). ⅛" cherry ¾" wide by 18½" long (enough for one handle). ½ ounce #1½ copper tacks (7/32" long), ½ ounce of #1½ long copper tacks (7/16" long). $11 (U.S.) ppd. for #4 carrier kit, $18 (U.S.) for two kits. The Home Shop, 500 East Broadway, Charlotte, MI 48813.

Produced by Marlen Kemmet with John Wilson
Photographs: Hopkins Associates
Illustrations: Jamie Downing; Bill Zaun

Jim Boelling, *WOOD* magazine's project builder, loves the challenge of building usable yet impressive-looking hand tools for our shop. For this walnut-and-brass center finder, the latest in our Collector's Edition series, Jim wanted the tool to look distinctive, feel comfortable in his hand, and be small enough to fit in his shop apron. This tool meets Jim's criteria, and it's terrific for locating the center of dowels and other round stock, too.

Let's shape the handle first

1 From ¾"-thick walnut stock, rip and crosscut a piece 1⅜" wide by 12" long. (We cut this piece extra long for safety in machining.)

2 Where shown in Step 1 of the Handle Blank drawing, miter-cut both ends of the stock at 45°.

3 Cut a ½" rabbet 1/16" deep on the right end of the walnut where shown on Step 2 of the drawing.

4 Crosscut the walnut 4½" from each end where shown in Step 3 on the drawing.

5 Follow Step 1 of the two-step drawing far *right* to epoxy the handle pieces; check that the surfaces are flush. (We used quick-set epoxy.) Later, remove the handle from the 4"-square block.

6 Transfer the handle pattern to one side of the handle blank and then to the other side. Using your bandsaw fitted with a ¼" blade, cut just outside the line to shape the handle. Then, sand to the line.

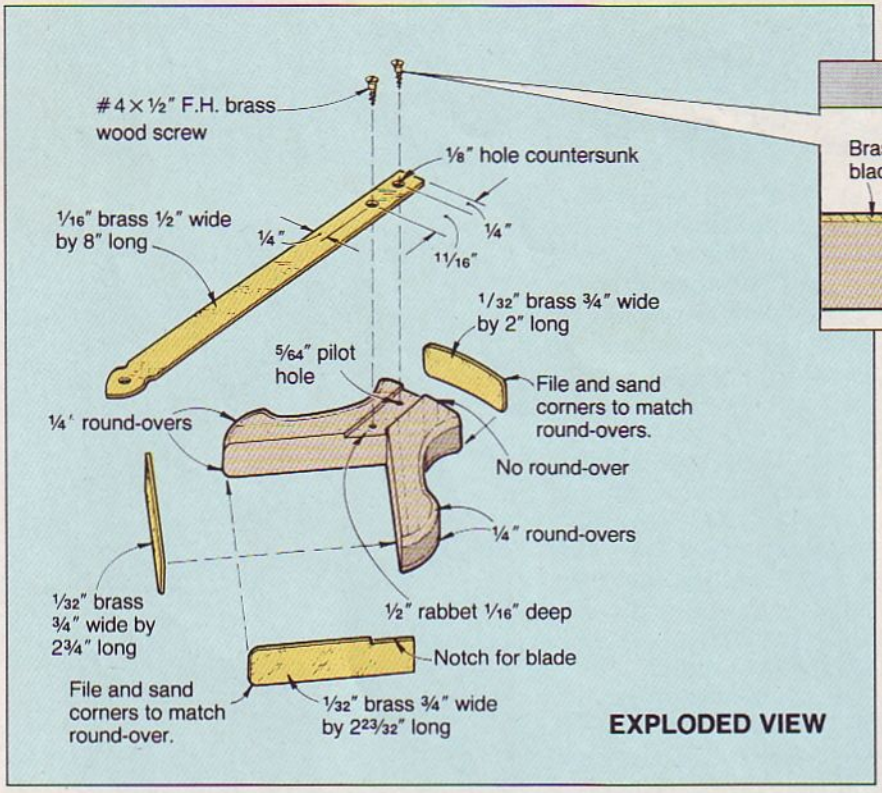
7 Rout a ¼" round-over on the handle where shown on the Exploded View drawing.

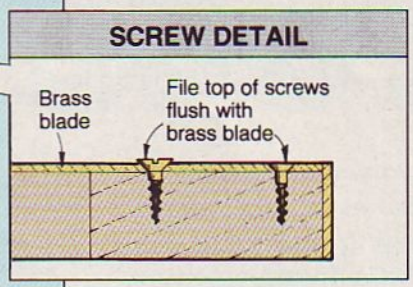
Trim the handle with brass

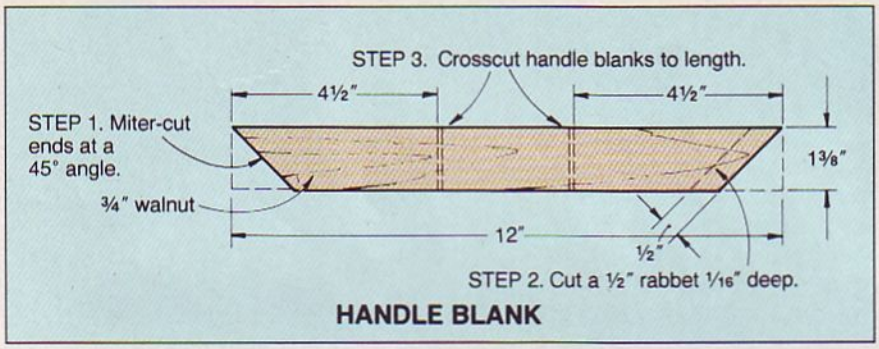
1 From 1/32 × ¾ × 12" brass, use a hacksaw or a bandsaw fitted with a ¼" or ⅜" blade to crosscut two pieces 2⅞" long. See the Buying Guide for our source of brass. (We took one section off each end of the 12" piece of brass to keep one square factory-cut end on each piece of brass.)

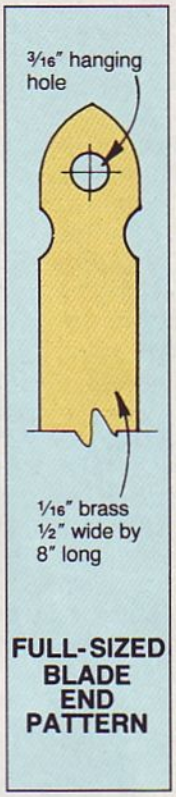
2 For better adhesion to the epoxy, rough up one face of each piece of brass with 80-grit sandpaper. With the square factory-cut edges of the brass pieces butting each other, epoxy them to the inside face of the handle blank.

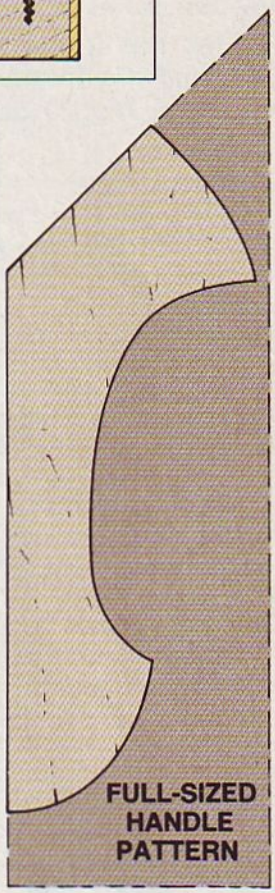
3 As shown in the photo at *right,* use a bastard file to notch the brass flush with the groove in the walnut. Be careful not to increase the depth or width of the groove.

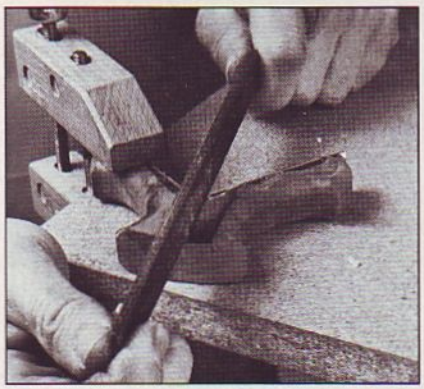

#4 × ½" F.H. brass wood screw
⅛" hole countersunk
1/16" brass ½" wide by 8" long
¼"
¼"
11/16"
1/32" brass ¾" wide by 2" long
5/64" pilot hole
File and sand corners to match round-overs.
¼' round-overs
No round-over
¼" round-overs
1/32" brass ¾" wide by 2¾" long
½" rabbet 1/16" deep
Notch for blade
File and sand corners to match round-over.
1/32" brass ¾" wide by 2 23/32" long
EXPLODED VIEW



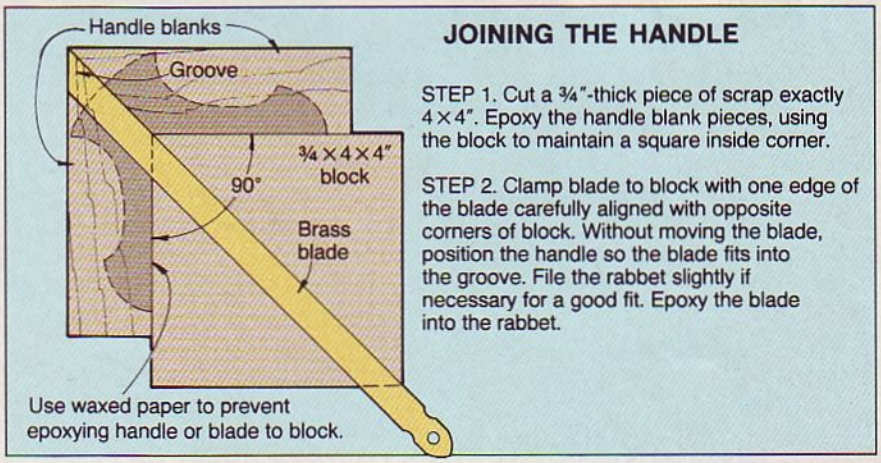








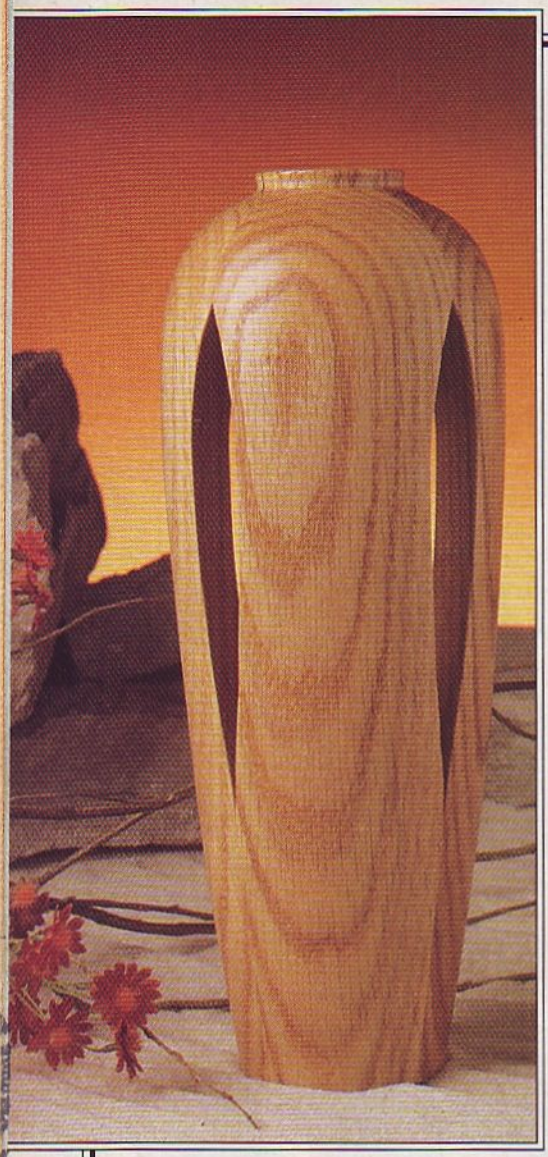
Use a bastard file to form a notch in the brass to match the groove cut in the walnut handle.


Handle blanks
Groove
¾ × 4 × 4" block
90°
Brass blade
Use waxed paper to prevent epoxying handle or blade to block.
JOINING THE HANDLE
STEP 1. Cut a ¾"-thick piece of scrap exactly 4 × 4". Epoxy the handle blank pieces, using the block to maintain a square inside corner.
STEP 2. Clamp blade to block with one edge of the blade carefully aligned with opposite corners of block. Without moving the blade, position the handle so the blade fits into the groove. File the rabbet slightly if necessary for a good fit. Epoxy the blade into the rabbet.

Epoxy the brass blade to the handle

Crosscut a piece of 1/16 × ½ × 12" brass to 8" long. Transfer the hanging-hole centerpoint and blade-end shape to the brass (see the full-sized pattern *above right*). Drill a 3/16" hanging hole where marked. Shape the tapered end of the brass blade with a bastard file and the concave contours with a rattail file.

Continued on page 80



SPLIT-TURNED V

Bob Taylor developed an early appetite for turning. At age 5, he was ready to start turning but unable to reach the lathe. To solve the problem, his father, an industrial arts teacher, built him a box to stand on. Bob, now a professor at Auburn University, still enjoys lathe work in his spare time. In fact, this split-vase design is one of his better sellers at craft fairs.

***Note:** You'll need two 2×2×24" turning squares to make this project. If you don't have stock this size, laminate thinner stock or see the Buying Guide at the end of the article for our source.*

Preparing the stock for turning

1 Cut four pieces of 2×2" stock (we used oak) to 11¾" long.

2 Joint two *adjacent* edges of each piece; check that the jointed edges are square to each other.

3 Now, rip the *other two edges* of each piece so each piece measures 1⅞" square.

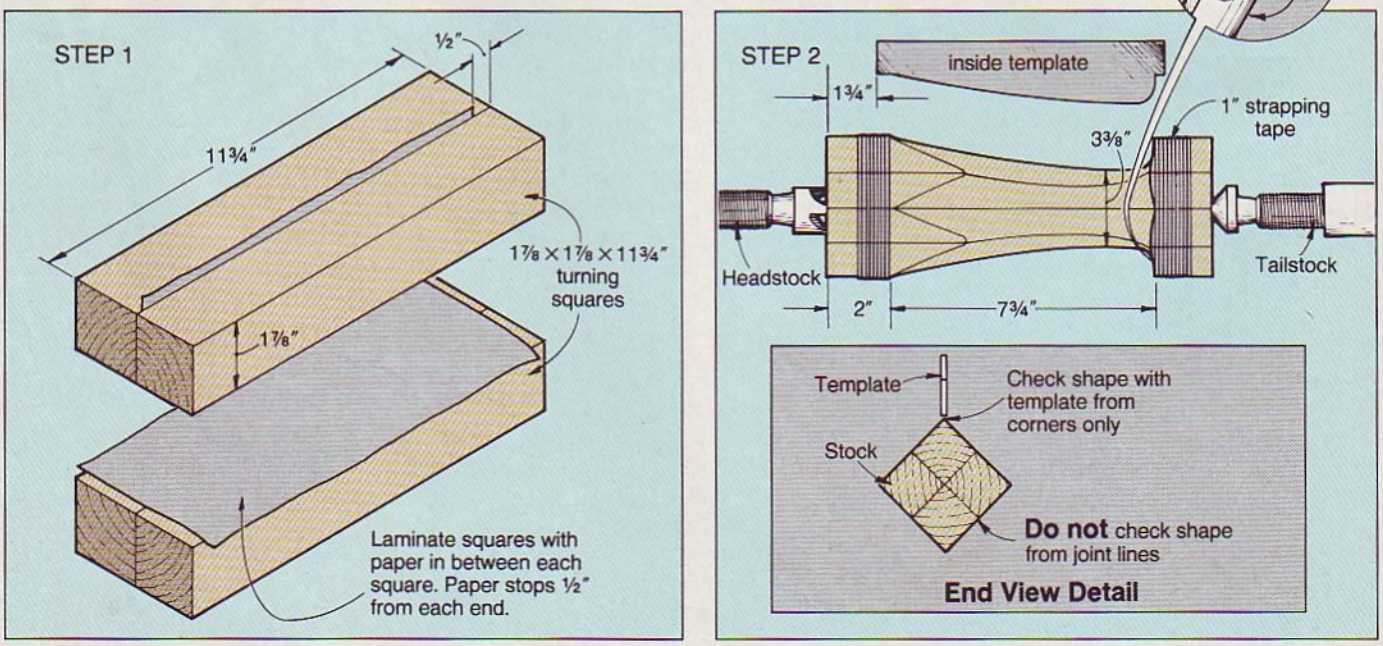
4 Cut two pieces of heavy paper (we used a grocery sack) to 2" wide by 10¾" long.

5 Glue and clamp two of the turning squares with the paper in place where shown in Step 1 of the drawing *below*. Please note the end-grain configuration. Check that the edges and ends are flush. Later, use an X-acto knife to trim the excess paper. The paper allows the lamination to be split after turning. Repeat with the other two squares.

6 Cut one piece of the paper to 3¾" wide by 10¾" long. Glue and clamp the two laminations.

7 To support the corners—they have a tendency to chip when turning—wrap 1" strapping tape around the lamination where shown on Step 2 of the drawing.

8 Transfer the full-sized template patterns on page 88 to posterboard, and cut them to shape.



D VASE A design with a "hole" lot of appeal

It's time to shape the inside

1 Using Step 2 of the drawing for reference, and the *inside template* on page 64, turn the lamination to shape. (We recommend a lathe speed of 750 rpm. To minimize chipping, we used a sharp ½" gouge.) Avoid using a scraper; it tends to leave a rough surface. Also, to reduce chipping at the radiused end, see the Gouge detail for tool-positioning reference when making the cut. Stop frequently and check the shape of the curve against that of the inside template where shown on the End View detail accompanying Step 2 of the drawing. *Don't make the curve too deep. The deeper the curve, the larger the openings in the completed vase.*

2 Sand the curved area smooth. Remove the strapping tape and split the lamination as shown in the photo at *right*.

Turn the outside to shape

1 Glue and clamp (no paper this time) the four turning squares in the positions shown on Step 3 of the drawing. Make sure that the curves stay aligned with each other when clamping. Let the glue dry overnight.

2 Using the *outside template* and a gouge, turn the vase lamination to the shape shown in Step 4 of the drawing. (We used a speed of about 1,200 to 1,500 rpm to minimize tool chatter caused by the openings.) Leave a ¾"-diameter waste tenon on the top and on the bottom of the turning.

3 Remove the tool rest and sand the vase. (We wrapped sandpaper around a felt pad to do this.) Holding your hand under the turning—like you'd throw a slow-pitch softball—sand the turning. *Don't* wrap your thumb around to the top of the turning. Holding the paper underneath the turning and using a speed of about 1,200 rpm helps prevent the sandpaper from catching in the openings.

4 Alternating between the top and base, make parting cuts at each tenon where shown on Step 4 of the drawing. Angle the tool where shown so the vase bottom is slightly concave and will sit flat. Do the same with the top to create the angled opening.

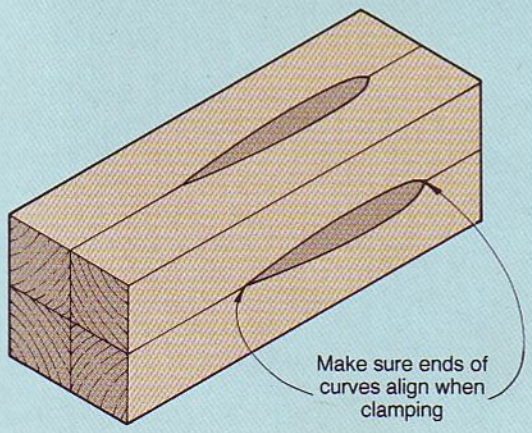
5 Remove the turning from the lathe and use a ⅝" Forstner bit to bore a hole through the top of the turning and into the hollow middle. Sand the top of the bored opening smooth. Apply finish.

Using a mallet and 1" chisel, split the lamination at the four paper joints.

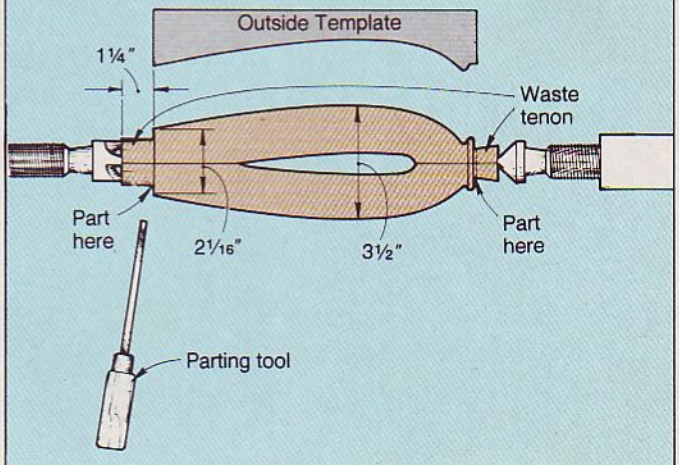
BUYING GUIDE

• ***Turning squares.*** 2 pieces of 2×2×24" red oak, catalog no. WD291, $13.35 ppd. Constantine's, 2050 Eastchester Rd., Bronx, NY 10461. Or, call 800-223-8087 to order.

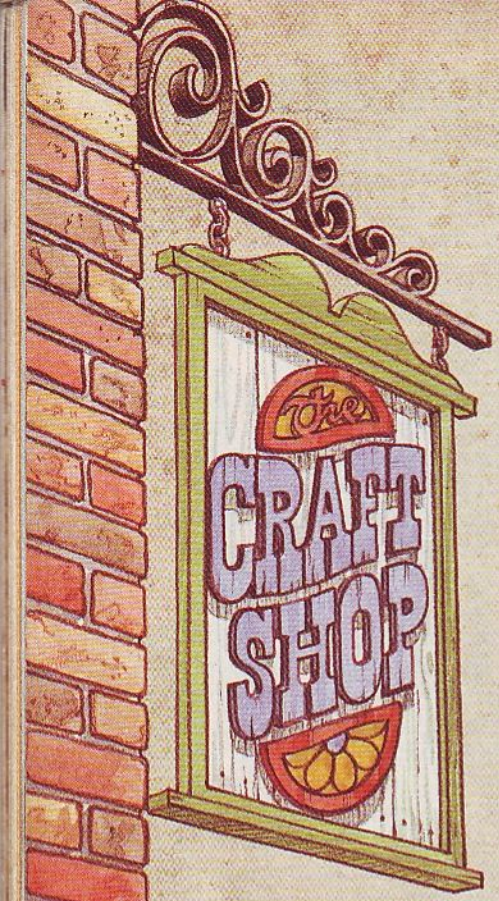
STEP 3



STEP 4



Project Design: C. Robert Taylor Photographs: Bob Calmer Illustrations: Kim Downing; Bill Zaun



Welcome to The Craft Shop, a new section of the magazine devoted to quick-and-easy projects that require a minimum of tools and materials.

If you like scrollsawed projects, handpainted designs, cutouts, and small decorative items, I know you'll really enjoy this section.

Enough talk; the time has come to snip the ribbon and open the doors. Have fun and don't forget to make a few extra.

Larry Clayton

For the *WOOD* magazine staff

SCROLLSAW DECORATION

NATURE-IN-THE -R

Capture the beauty of spring with this delightful scrollsaw project. Make the stand to display it or simply hang it in front of a window.

To make your decoration, start with a 6×12″ piece of fine-grained hardwood such as cherry or walnut, and plane or resaw it to ⅜″ thick. Cut a 6″-square workpiece from this. (Use the remaining 6″ square for a second decoration.)

With carbon paper or a photocopy and spray-on adhesive, transfer the full-sized pattern to the workpiece. Chuck a 3/32″ bit into your drill, and drill blade-start holes where shown on the pattern.

Thread a scrollsaw blade through one of the holes and begin cutting the openings. (We used a blade with 18 teeth per inch.) When cutting the bird's narrow beak, begin your cut at the head—both at the top and bottom of the beak—and cut toward the end of the beak to avoid breaking it. Continue reinserting the blade in the holes and cutting until all the openings are complete, including the stamen lines in the flower centers.

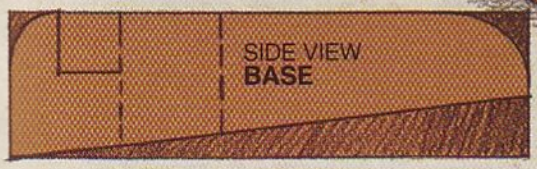
Finally, form the outside perimeter of the decoration by cutting just outside the marked line, and then sanding to the line. (We used a disk sander.) Remove the paper pattern from the decoration with lacquer thinner. To do this, dampen a cloth with lacquer thinner and press against the paper pattern. Peel off the paper and use the cloth to wipe off any sticky residue on the wood.

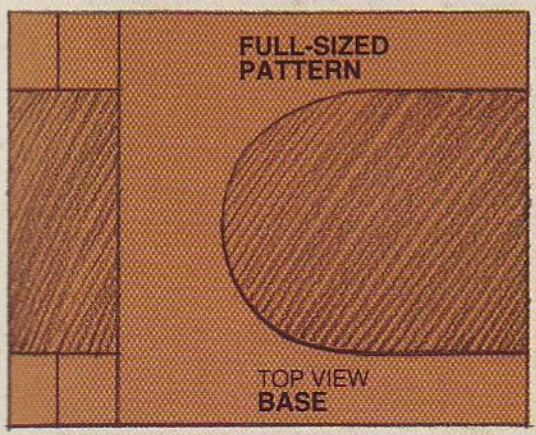
To make the stand, follow the three-step cutting process shown *far right*. Finish-sand both pieces and apply a finish. (We applied two coats of tung oil.) You might want to hang this project in front of a window.

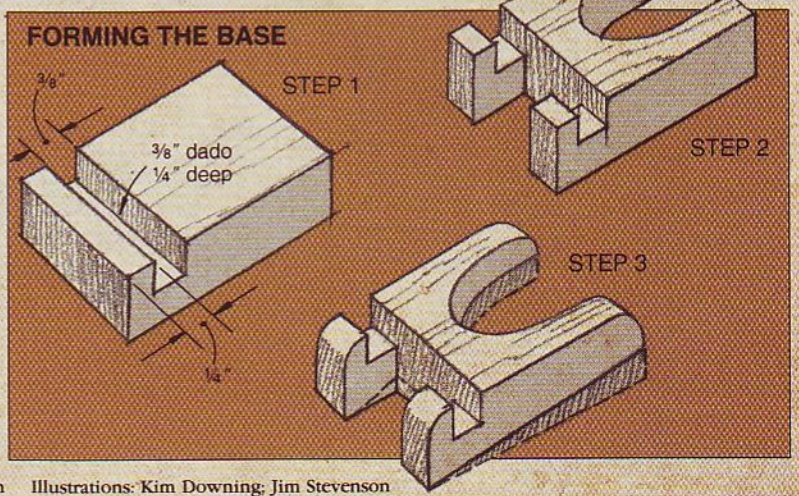
IE -ROUND

Drill 3/32" holes through the workpiece wherever there is a red dot on the pattern at right. This will allow you to insert your scrollsaw blade at these points for cutting each opening to shape.

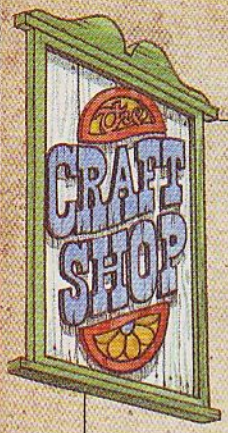
After scrollsawing the pattern, you can easily accomplish touch-up sanding by using an emery nail file or sandpaper wrapped around a stick.

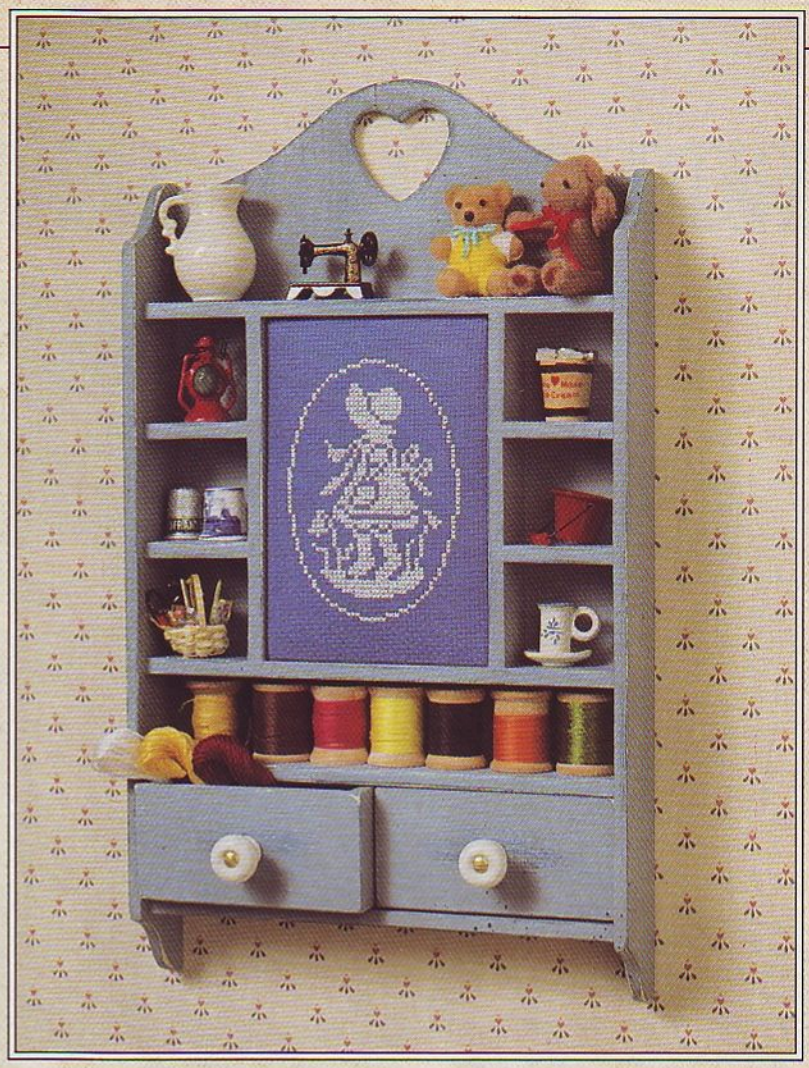






Project Design: Nancy Clavier Photograph: John Hetherington Illustrations: Kim Downing; Jim Stevenson

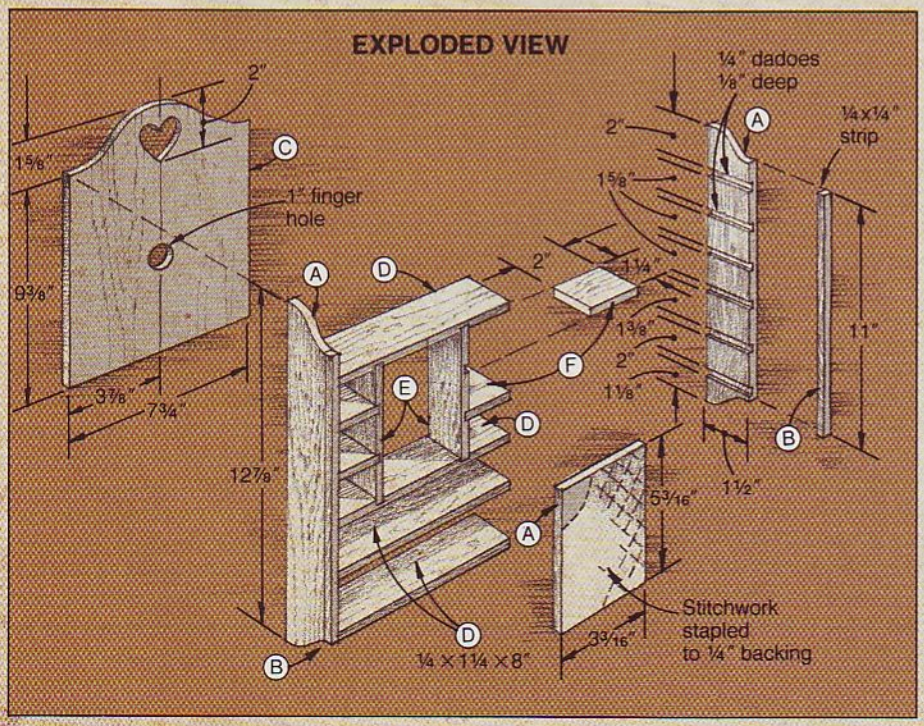


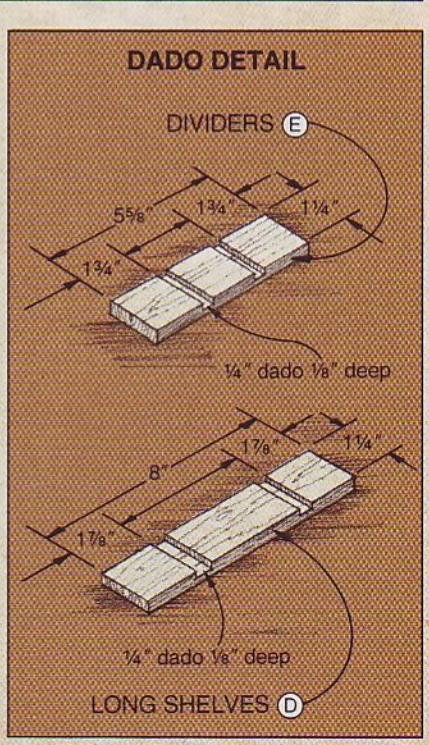


ODDS 'N' ENDS

COUNTRY SHADOW BOX

Fanciers of small collectibles, at last you have the perfect project for showcasing thimbles and other small items. Then, add our counted cross-stitch design for a center highlight.





Note: *See page 86 for the stitchwork pattern we used and the Exploded View drawing for the dimensions of the ¼"-thick piece used to back the stitchwork.*

To make the side pieces (A), cut a piece 12⅞" long by 3⅝" wide from ¼" stock (plane or resaw thicker stock). Using a try square and the dimensions on the Exploded View drawing, mark the location of the ¼" dadoes on the stock. Now, cut or rout ¼" dadoes ⅛" deep across the piece where marked. Rip two 1½"-wide side pieces (A) from the 3⅝"-wide dadoed piece.

Cut two pieces of ¼" stock to ¼" wide by 12⅞" long for the facing strips (B). With the surfaces and ends flush, glue and clamp a strip to the front of each side (A).

Transfer the full-sized top and bottom pattern shown *below* to the cabinet sides (A, B). Using a scrollsaw or bandsaw, cut the top and bottom of each cabinet side to shape.

From ¼" stock, cut the two back pieces to 3⅞" wide by 11" long for the backboard (C). Transfer the heart outline to each of the 3⅞"-wide pieces. Then, cut the pieces to shape, and glue and clamp them edge to edge.

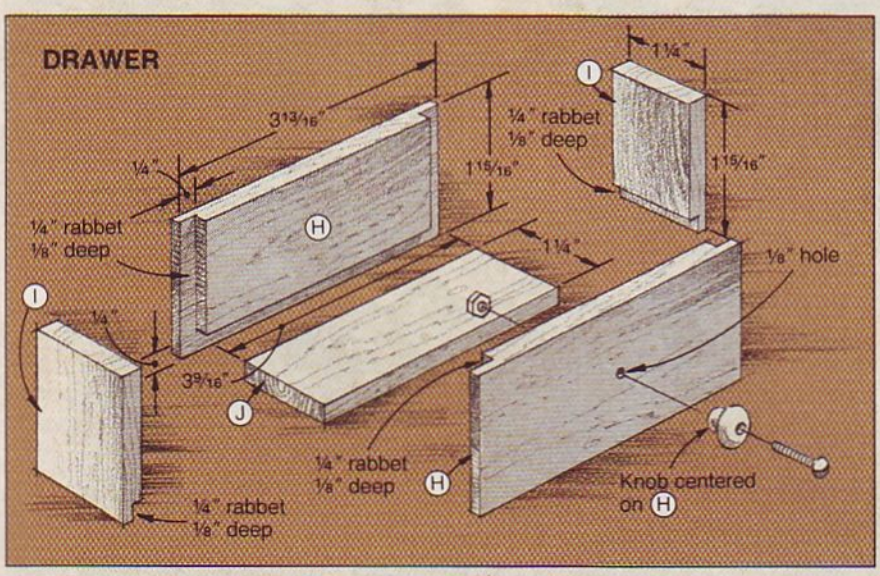
Transfer the Backboard Top pattern to the backboard, and cut to shape. Drill a 1" finger hole through the backboard. The hole allows you to easily remove the stitchwork without prying.

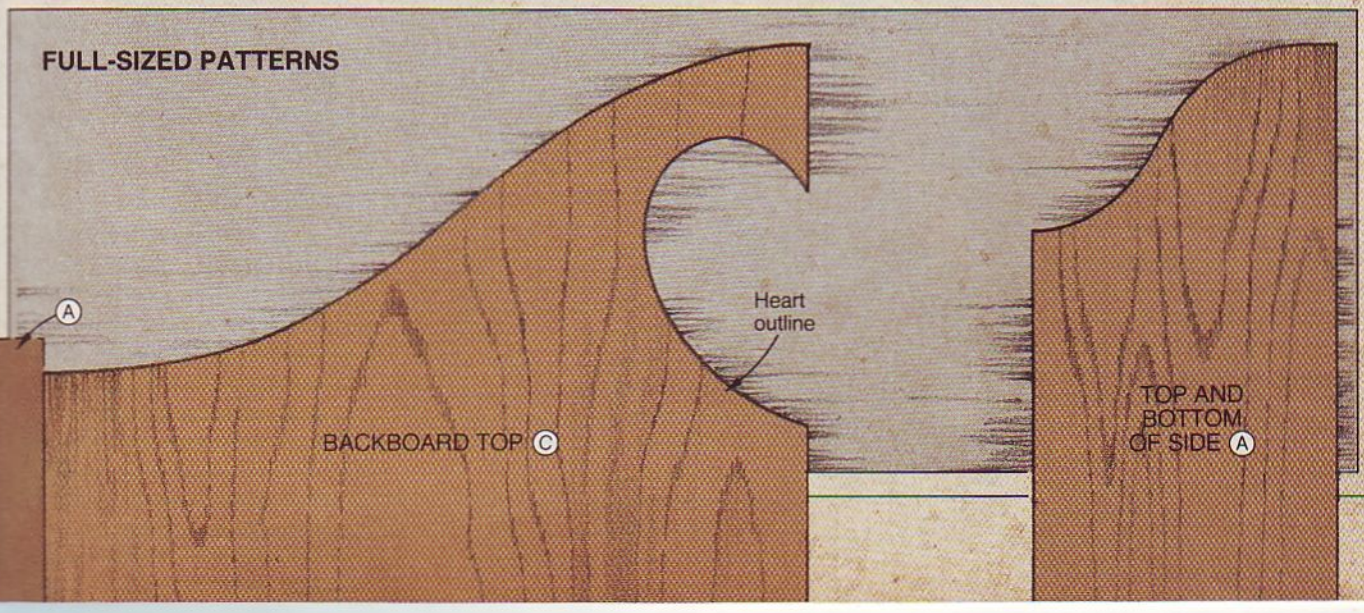
Cut the four long shelves (D) and the two dividers (E) to the sizes shown in the Dado detail. Mark the dado locations on two of the shelves and both dividers where dimensioned on the detail. Cut or rout the dadoes. Cut the four short shelves (F) to size. Dry-clamp the assembly to check the fit of all the pieces. Trim if necessary. Then, glue and clamp the assembly, checking for square. Measure the opening, and cut the stitchwork backing (G) to size minus 1/16" in length and width.

Using the Drawer drawing for reference, cut pieces H, I, J to size. Cut ¼" rabbets ⅛" deep where shown. Glue and clamp each drawer. Drill a ⅛" hole in the center of each drawer front.

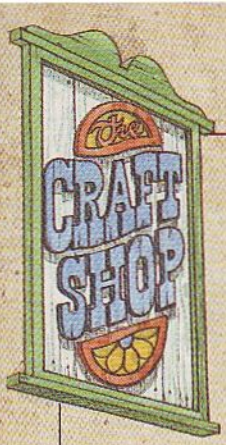
Brush on the desired color of paint. (For our country antique look, we applied a medium blue paint, followed by a light blue. Next, we sanded the edges to make the project appear worn. Finally, we speckled the project with dark navy blue.)

Attach the knobs. With the quilt batting in place, stretch the stitchwork around the backing piece and staple it in place. Slide the stitchwork/backing in place, and hang the project where it's sure to be noticed.



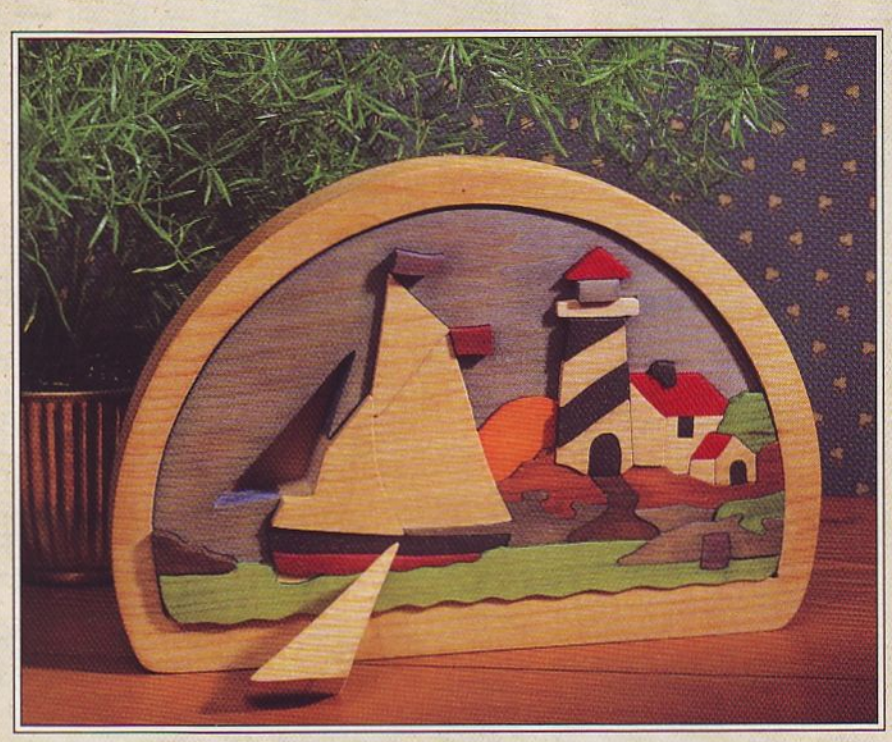


Project Design: James R. Downing
Cross-Stitch Design: Dixie Falls
Photograph: Hopkins Associates
Illustrations: Jamie Downing; Jim Stevenson



LURE OF THE SEA

RELIEF PUZZLE

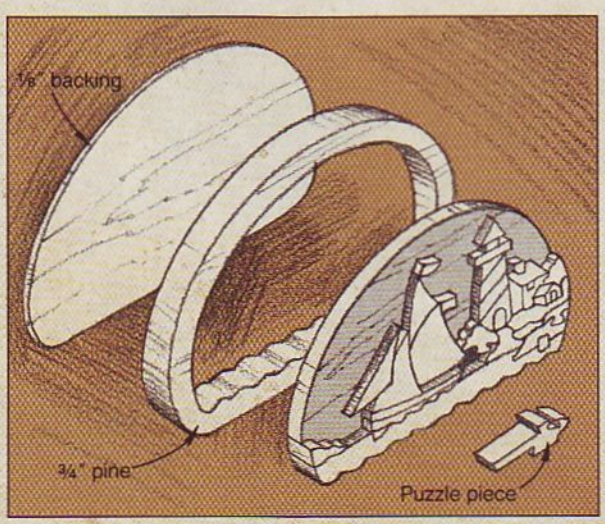


When you scrollsaw and paint the parts for this colorful coastal scene, you're setting sail for a good time. Place the puzzle in a child's longing hands or on a shelf for its pure visual beauty.

Cut a ¾" clear pine board to 7×11". Sand the front and back of the board. Transfer the full-sized pattern to the stock, aligning the bottom of the pattern with the bottom of the board. (We made a photocopy of the pattern and mounted it to the stock with spray-on adhesive.)

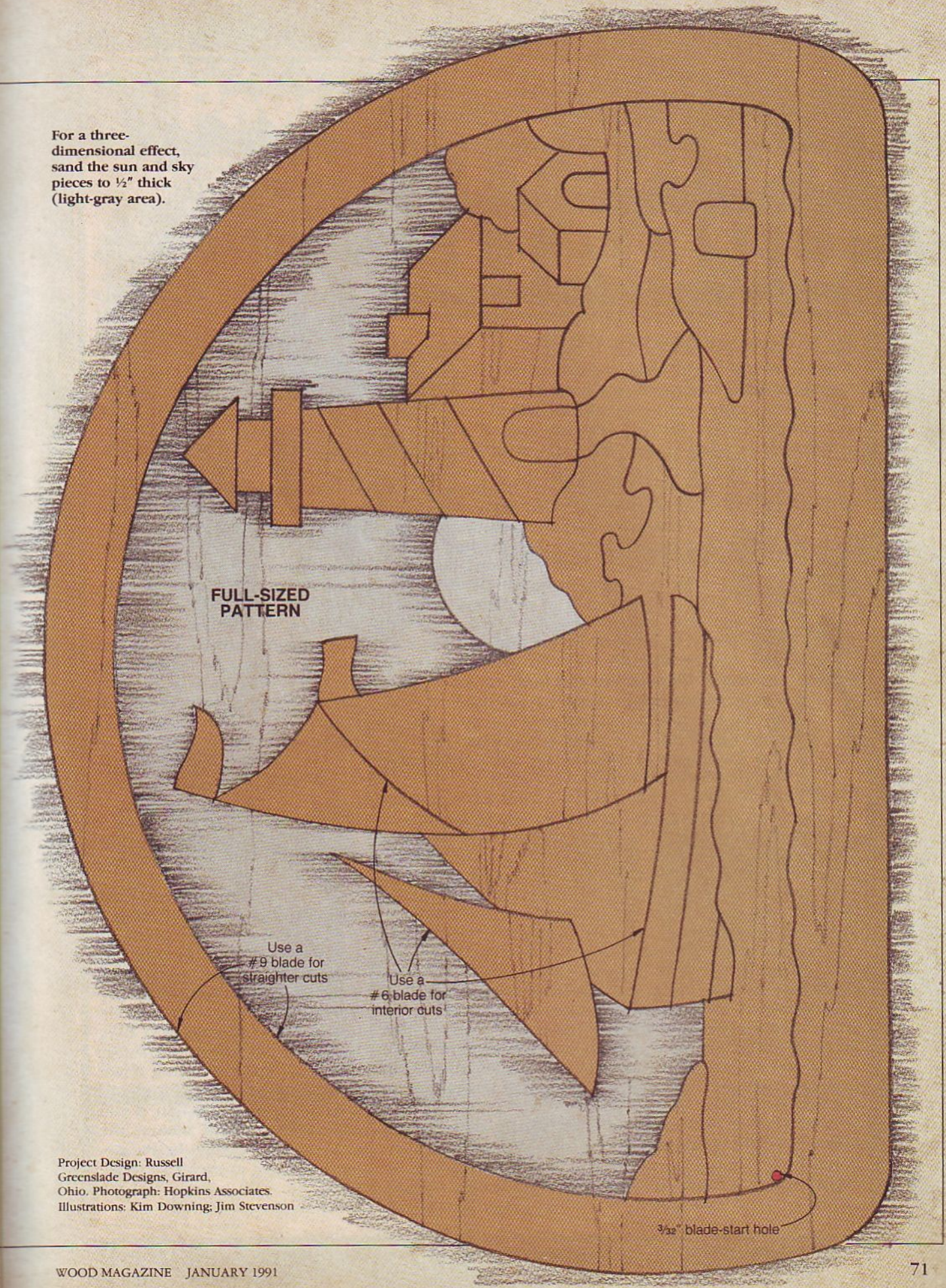
Scrollsaw around the outside of the frame. (Using a #9 blade, we sawed just outside the cutline.) Drill a 3/32" blade start hole through the board where marked on the pattern and thread the scrollsaw blade through the hole. Cut the interior edge of the frame. Switch to a #6 blade and cut the individual pieces to shape. Remove the paper pattern pieces. (We used lacquer thinner to disolve the adhesive.)

Lay the pine frame on a piece of ⅛"-thick plywood or hardboard, and trace the frame's outline on it. Cut the backing to shape. With the edges flush, glue the backing to the frame. Sand flush the edges of the frame and backing.



To create the three-dimensional effect, sand the sky and sun pieces to reduce the thickness to ½". (We used a stationary sander; a belt sander also would work.) Finish-sand all the pieces.

Finally, following the lead of the photo *above* or your own imagination, paint or dye the puzzle pieces. For an easier-to-assemble puzzle, paint just the front and side surfaces. To make assembling the puzzle more challenging, paint all surfaces of the pieces. (We used wood dyes for the colored pieces—watered-down acrylic paints also work well. We left the sail pieces, frame, and parts of the lighthouse natural. Later, we applied several coats of mineral oil to all the pieces to seal them.)


For a three-dimensional effect, sand the sun and sky pieces to ½" thick (light-gray area).
FULL-SIZED PATTERN
Use a #9 blade for straighter cuts
Use a #6 blade for interior cuts
3/32" blade-start hole

Project Design: Russell Greenslade Designs, Girard, Ohio. Photograph: Hopkins Associates. Illustrations: Kim Downing; Jim Stevenson

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CENTER FINDER

Continued from page 61

2 Sand the portion of the brass that will fit into the groove in the handle. Follow Step 2 of the two-step drawing to epoxy the blade to the handle. After the epoxy has cured, remove the center finder from the 4"-square block, and file the end of the blade flush with the outside edge of the handle.

3 Mark the location of the two holes on the blade where dimensioned on the Exploded View drawing. Use a center punch to slightly indent each marked hole to prevent the drill bit from skidding. Drill a 5/64" pilot hole 1/2" deep where indented.

4 Now, switch bits, and use a twist-drill bit to drill a pair of 1/8" shank holes just through the brass. Countersink the holes slightly so the bottom of the slot in the #4×1/2" brass screws line up just a hair *above* the surface of the brass blade. See the Screw detail for reference.

5 Drive the screws. Then, file off the head of each one until it is flush with the surface of the brass.

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2 Sand and file the brass flush with the walnut surfaces.

3 Finish-sand and hang the center finder on a wire. Spray on several coats of clear finish.

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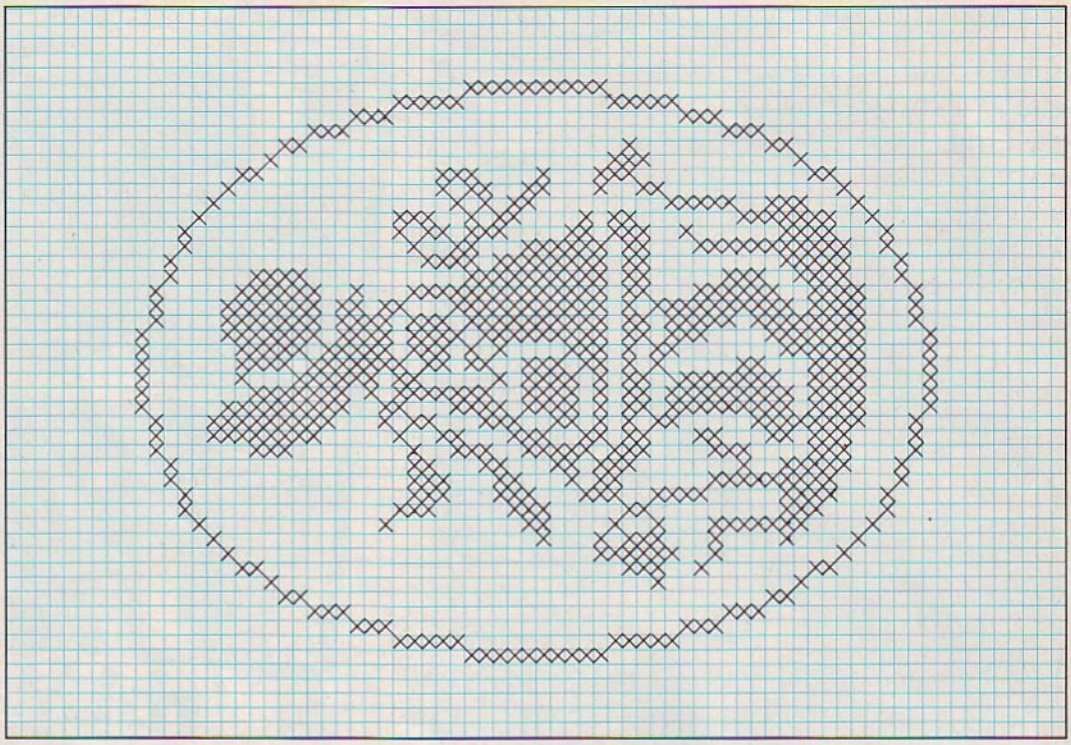
Project Design: Jim Boelling
Photographs: Hopkins Associates
Illustrations: Kim Downing; Bill Zaun

COUNTRY SHADOW BOX

Continued from page 69

Cut a piece of 14-count marine blue aida to 5¼ × 7⅜". This allows an inch overhang on all edges. Center and stitch the full-sized pattern shown at right to the fabric. We used white embroidery floss.



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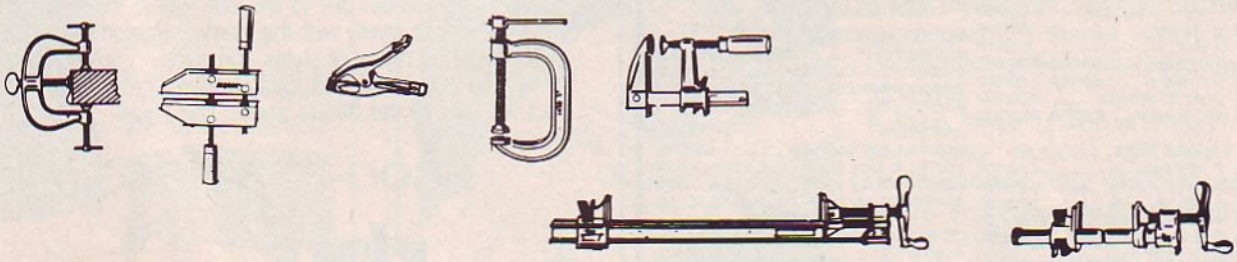

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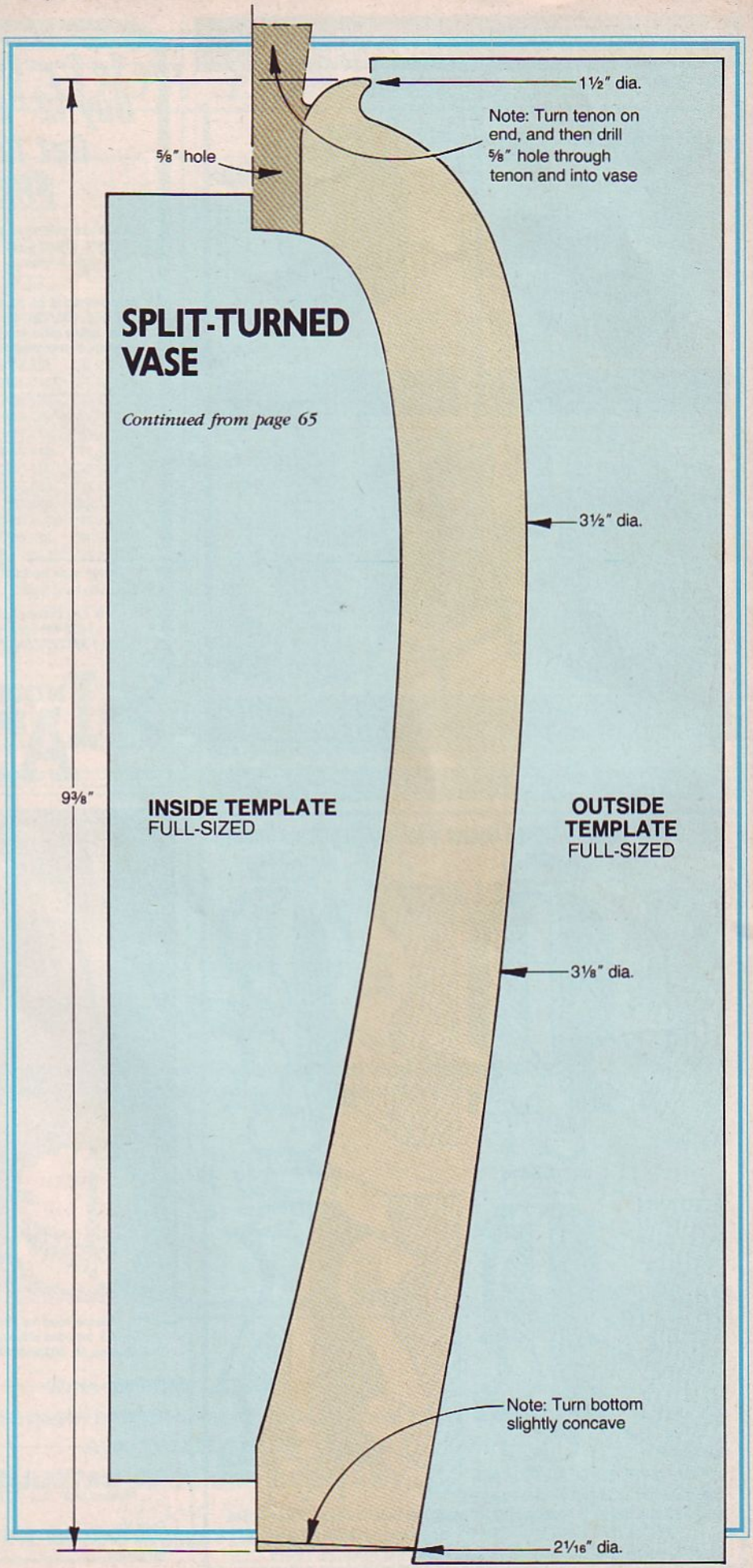

SPLIT-TURNED VASE

Continued from page 65